THE IRON AGE

New York, Thursday, May 24, 1906.

Hulett Coal Handlers at Duluth.

At Duluth, Minn., on the dock of the Boston Coal Dock & Wharf Company, there have recently been installed two Hulett conveyor bridges designed and built by the Wellman-Seaver-Morgan Company, Cleveland, Ohio, views of which are given in the accompanying engravings. It is the function of the machines to unload coal from lake barges alongside the dock and deposit it in stock piles, and, between the receipt of cargoes, to rehandle the coal from the stock piles to screens in the towers of the bridges, where the slack is screened from the commercial sizes, the latter being delivered to cars on adjoining railroad tracks, while the slack is deposited on other storage piles. The manner in which the operations proceed from left to right, as viewed in Figs. 1 and 2, will be recognized from a reference to those engravings, and Fig. 3 shows a nearer view of the tower where the screening is performed.

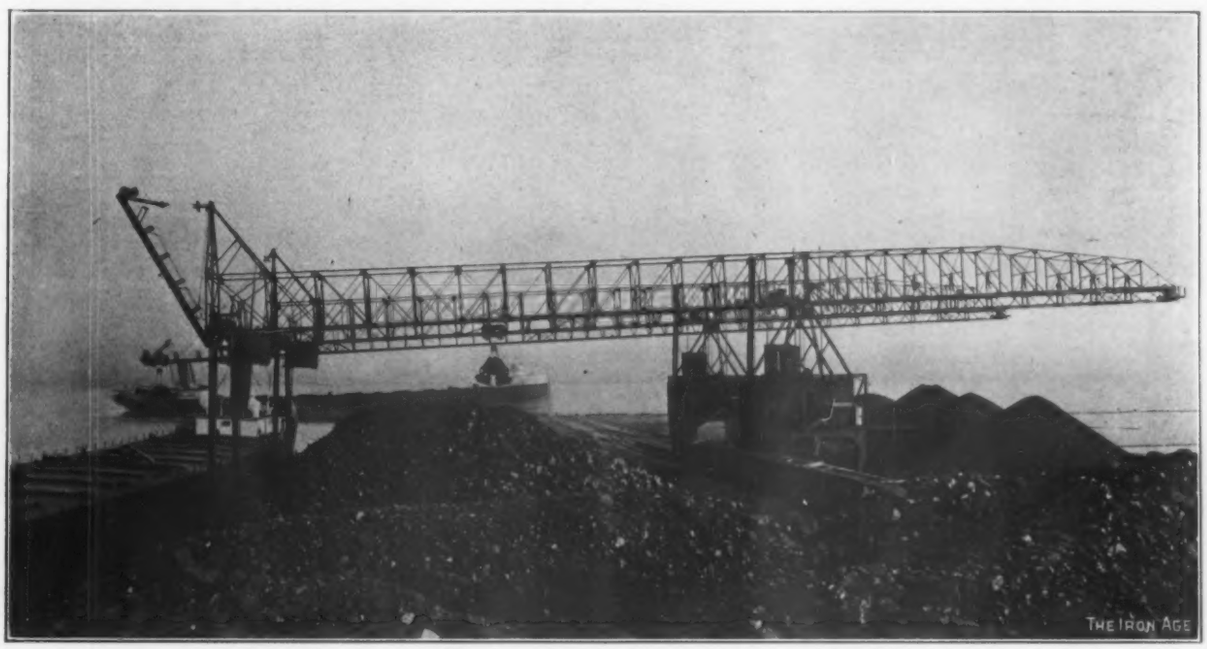


Fig. 1.—Two Hulett Coal Handling Conveyor Bridges at Boston Coal Dock, Duluth, Minn., Showing Cantilever of One Bridge Raised.

Each conveyor consists of a bridge having a central span 176 feet long, a fixed cantilever at the rear end 130 feet long and a folding or hinged cantilever at the front end of the bridge 53 feet long. The latter carries the tracks for trolleying out over the hatches of the boats, but is arranged so that it may be swung to a vertical position to clear the masts and rigging of steamers and barges when the latter are docking or departing, or when the bridge is being traveled. The front end of each bridge is supported by a shear leg, and the rear end by a tower in which is located the machinery for operating the trolley and bucket and traversing the bridge along its tracks.

Steam is the motive power for operating the bridges, each being provided with one engine for handling the bucket and traversing the bridge, and another for traversing the trolley, which is carried on tracks hung from the bridge, while a third engine operates the screening equipment. The towers are supplied with screening chutes and a belt conveyor for carrying slack coal to the outer side of the bridge. These screening chutes are arranged with gates at the hopper for accurately controlling the flow of coal and have at their lower ends telescopic chutes, which may be adjusted in length for convenience in discharging the coal into cars on the railroad tracks.

On each bridge are two operators' cabs, one on the shear leg from which the bridge is operated when unloading boats, enabling the operator to see into the hold of the vessel, that he may better direct the movement of the bucket, and the second on the machinery tower, which is used when handling coal from the storage piles to the screening hoppers. The operating connections to either tower may be readily connected or disengaged, as required. Coal may be stored in open piles beneath the center span or beneath the rear cantilever extension. The folding cantilever is raised and lowered by means of a drum driven by the engine which operates the bucket, this drum being provided with a brake for holding it in any position, and also with a clutch, so that the drum may be disconnected from the engine when the bucket is to be used, or connected with it when the cantilever is to be moved.

The bridges are equipped with Hulett patent excavating buckets, each capable of holding two tons of coal. The hoisting arrangement of the ropes is along the lines of late Hulett patents, especially designed to obtain maximum speeds of operation. The bucket with its load may be hoisted at a speed of 250 feet per minute and cross-traversed at 1000 feet per minute. The bridges are self propelling along the dock at a speed of about 75 feet per minute.

The Falls Hollow Staybolt Company, Cuyahoga Falls, Ohio, has recently received large orders from the Royal Railway of Saxony, the New Zealand Government railways, the Farro Carril Payta Piura Railway of Peru, and from three leading railroads of Japan. The company is now furnishing over 100 leading railroads of the United States, Canada and Mexico with hollow iron for repair work. It is shipping large quantities to the Baldwin Locomotive Works for new equipment, in which Falls hollow iron was specified. A report of 16 test samples from the Baldwin Locomotive Works shows the following average result: "Tensile strength, 50,833 pounds per square inch; elongation, 32.33 per cent.; reduction of area, 49.1 per cent.; threading test, O. K.;

double bending test, O. K.; vibratory test, the threaded specimens stood an average of 7713 revolutions when subjected to a deflection of 3-32 inch and a tensile load of 4000 pounds; etching test, this test shows the iron to be slab piled. This make of iron meets our proposed new specifications in every respect."

Cost of Talbot and Stationary Open Hearth Furnaces.

A paper by G. A. Wilson on "The Talbot Continuous Process and Its Benefits in Steel Making," read before the West of Scotland Iron and Steel Institute at Glasgow, was reproduced in *The Iron Age* of March 15, page 948. At a subsequent meeting of the institute various contributions to the discussion of the paper were presented. In answer to a question as to the cost of a Talbot furnace installation, Mr. Wilson read the following statement from Mr. Talbot:

"As to the cost of plant, I fail to see where practical engineers find a basis for argument that the Talbot plant is so much more expensive than a good modern fixed furnace plant, when equal outputs are considered. Comparing it with a modern 50-ton standard American fixed furnace, we find that the gas and air chambers are the same size as they are in our 175-ton furnace, while the furnace is 29 feet between blocks and 14 feet wide, as against our 37 feet 6 inches between blocks and 15 feet wide. The 50-ton furnace would turn out with English practice some nine or ten charges per week, or, say, 450 to 500 tons, while the tipping furnace used in the continuous process would turn out from 1100 to 1200 tons per week. In dissecting the cost of building the plants the only thing that is not common to the two is the cost of the iron work which is necessary for the tilting section. There is also the extra brick work which the longer furnace hearth requires. In modern American plants the same building is put over the 50-ton fixed furnace as we use over our 175-ton furnace; the only difference is that we require some 105 feet from center to center of each furnace, whereas they only require some 80 feet. The 40-ton electric traveling crane on the charging side and the 75-ton crane on the tapping side are common to both plants. As already said, the regenerators are the same size; all valves, covers, stack, regenerator binding, etc., are practically the same, so that the cost below the charging platform is approximately the same for the 50-ton furnace as for the 175-ton tipping furnace. The only three items, therefore, which are not common to fixed furnace plant are the tilting section, with the necessary hydraulic cylinders for tilting it, the two movable port ends and the extra brick work. These do not amount to a large percentage of the total cost of the complete installation, while by adopting them and so fitting the plant to work the continuous process the output is doubled and a very large saving per ton of steel ingot produced is effected. Without committing myself to actual figures, I may say that, in my opinion, the capital cost per ton would probably be less on a large plant, and in any case should not be more for the continuous process than it is for modern fixed furnace practice."

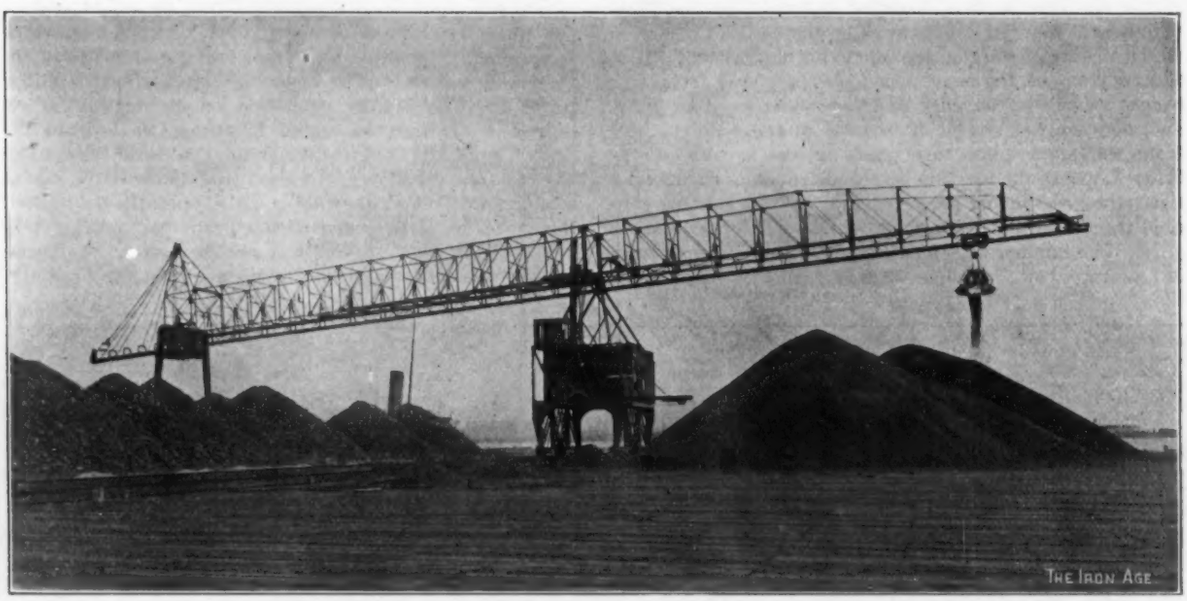


Fig. 2.—One of the Two Coal Handling Bridges, Showing the Bucket Dumping.

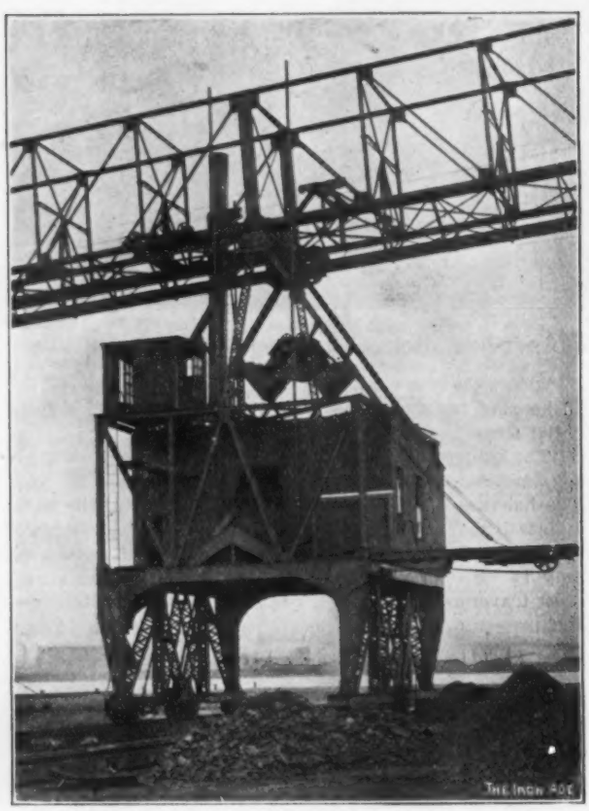


Fig. 3.—The Bucket as Used in Connection with the Screening Hopper in the Machinery Tower.

A circular has been received from Ralph T. Olcott, secretary and treasurer of the International Congress of Inventors, 16 State street, Rochester, N. Y. The circular sets forth the scheme of the International Congress of Inventors, which is an organization for the advancement and protection of inventors generally, and is designed to endeavor to improve conditions affecting inventors and allied interests and to co-operate with other bodies, local and national, in such work. George F. Gallagher is president of the organization and Walter S. Strowger and James M. Brazill are vice-presidents.

Changes During the Cooling of Cast Iron.*

Investigations of Volume and Temperature.

BY PROF. THOMAS TURNER, BIRMINGHAM.

It is a matter of common observation that some metals or alloys fill a mold better and take sharper impressions than others; patternmakers are aware that the allowance to be made for shrinkage varies with the kind of metal and the shape of the casting, while it is generally known that solid gray cast iron floats before it melts when it is thrown upon a fluid bath of the same metal. These facts are connected with the contraction, expansion, shrinkage or other volume change or changes which take place while metals solidify and afterward cool to the temperature of the air. The whole subject is of great practical importance, and of no little complexity, although, in the United Kingdom at all events, it has not hitherto received the attention which it deserves.

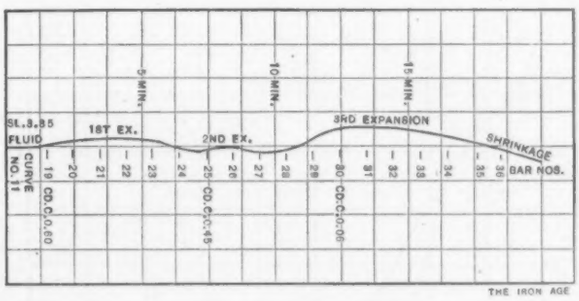


Fig. 1.—The Three Expansions Characteristic of Soft Gray Phosphoric Iron.

With the application of scientific methods in the large iron foundries in America, dating from about 1885, special attention was paid to the shrinkage of cast iron, and about this time W. J. Keep introduced his now well-known method of measuring shrinkage in a 12-inch bar by means of a graduated wedge inserted between the end of the cold bar and the chill in which it was cast. Though this simple form of test is of great value to the practical man, on account of the ready control it allows of foundry mixtures, it gives merely the algebraic sum of the expansions and contractions which have taken place, and does not permit of their differentiation. To overcome this difficulty Keep, Moldenke and West have introduced forms of apparatus for observing the changes of volume of a cast bar from the moment it begins to solidify until it reaches the atmospheric temperature.

Keep's apparatus and the valuable conclusions deduced from its application have been fully described in the *Journal* of this institute.† It consists essentially of two steel pins which enter near the ends of a sand mold in which the test bar is cast. These pins engage arms which work on pivots on the edge of the flask; the outer ends of these arms move ten times as far as the pins in the test bar, and their motion is recorded on a rotating drum. Mr. Keep's paper is full of most useful information, but perhaps the most important facts are represented in Fig. 1, which shows the three expansions which are characteristic of soft gray phosphoric iron. In the same diagram the proportion of combined carbon is also given.

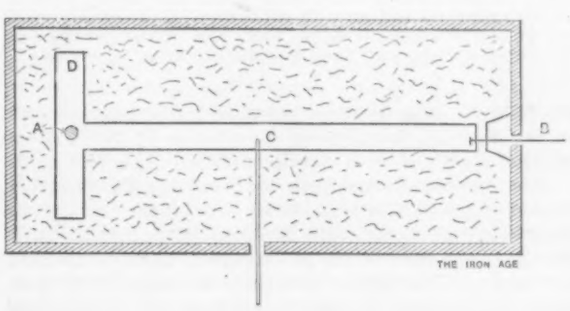


Fig. 2.—Plan of Lower Half of Mold for Making the Test Piece.

The one marked omission in Mr. Keep's paper was that no temperature determinations were made, but this was to some extent remedied by the contribution made by Mr. Osmond to the discussion. Mr. Osmond referred to his observations on the temperature retardation which took place at certain intervals during the cooling of iron,* and suggested that the first expansion might take place at about 1100 degrees C., where the greater proportion of the graphite separates. The second expansion would only be observed in phosphoric iron, and would occur at about 900 degrees C.; while the third expansion certainly occurred at Barrett's point of recalescence, and might be expected at about 700 degrees C. Mr. Osmond, however, pointed out that these temperatures might vary somewhat considerably with the chemical composition of the metal and the conditions of the experiment. It may be added that in 1903, at my suggestion, my colleague, O. F. Hudson, determined the points of retardation in a sample of No. 1 Northampton pig iron, and found them to be respectively 1115, 935 and 860 degrees C. The first of these values agrees very closely with Mr. Osmond's prediction, but the other temperatures were, in this case, higher than he anticipated.

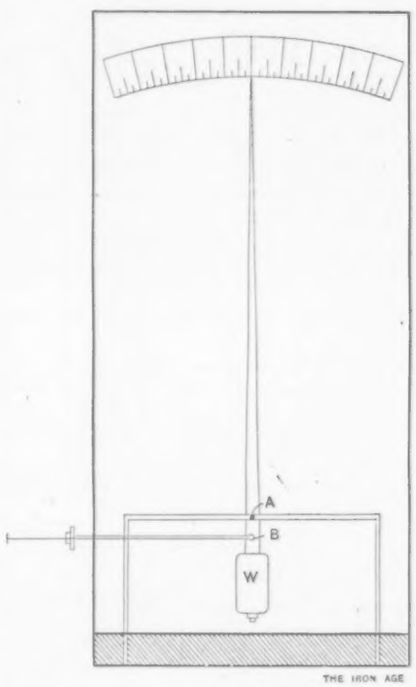


Fig. 3.—The Extensiometer.

As the changes which take place during the solidification and cooling of cast iron are of great practical and theoretical importance, it appeared advisable that further study should be made with accurate apparatus and typical materials. For this purpose a special and simplified form of apparatus was designed, in order to measure the changes of length of the test bar, while cooling curves were taken of the specimens at the same time by means of the Le Chatelier pyrometer.

While Keep's apparatus is a marked advance on anything before attempted, and admirably suited to its purpose, it was felt that the autographic record, which, for works purposes would be invaluable, was not the best for a series of experiments where it might at any time be necessary to devote special attention to a particular part of the curve. Naturally, an autographic apparatus, unless arranged to run at various speeds, gives the same space for each time interval, whether that interval be of special importance or not.

* Abstract of paper read before the Iron and Steel Institute, May meeting, London.

† *Journal of the Iron and Steel Institute*, 1895, No. II, p. 227. See also Keep's "Cast Iron"—an excellent book.

* *Annales des Mines*, 8th series, vol. xiv, 1888, pp. 39 and 81.

The form of apparatus ultimately adopted by the author, after various trials, may be described as consisting of three portions—namely, the mold with the test bar, an arrangement for indicating changes of length in the bar, and the pyrometer. The experiment was that of casting a bar in a sand mold, keeping one end of the bar fixed, and noting the alterations in position of the other end, which was left free to move. At the same time a thermo-couple was introduced into the mold so as to indicate the temperature.

The form of test piece and method of working will be understood from Fig. 2, in which is given a plan of the lower half of the sand mold, with everything in place for receiving the metal. In this illustration A is a fixed vertical pin, B a movable horizontal pin, C a thermo-couple, D the position of the gate. In order to insure that the one end of the bar does not move, the casting is made in T form; and, to make assurance doubly sure, a short steel pin enters vertically at A, and is clamped above to the end of the iron box containing the mold. The metal solidifies round this pin as it cools, so that movement at this end is prevented. At the other end a thin fin of sand is left, just sufficient to prevent the flow of the metal when fluid, but not enough to appreciably interfere with

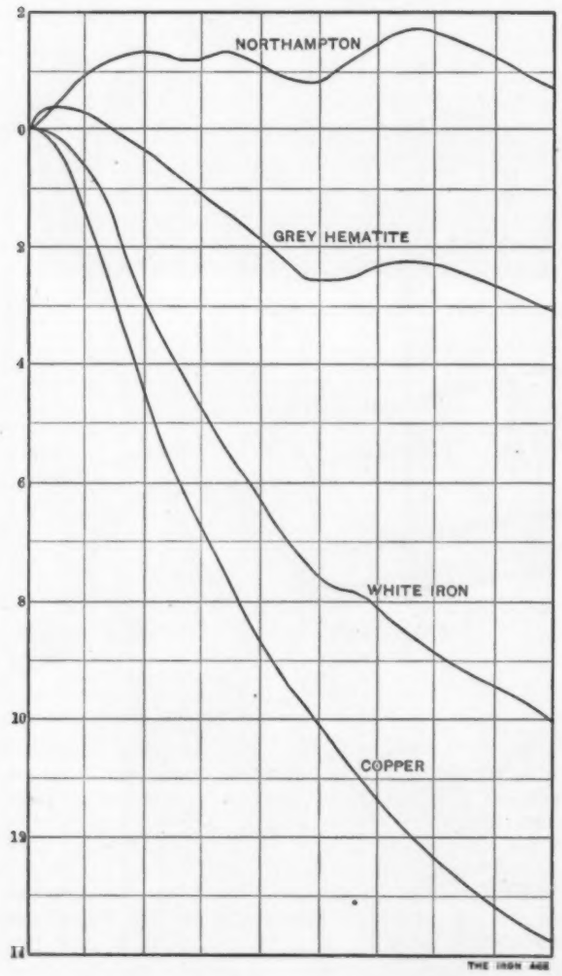


Fig. 4.—Types of Contraction Curves.—Vertical Figures Showing Shrinkage in Hundredths of an Inch and Horizontal Squares Showing Time with Each Division Equaling 25 Seconds.

the free movement of a solid bar. Passing through this fin in a horizontal direction, and continuous with the center of the bar, is a metal pin which, as a matter of fact, consists of a wire nail, as the head is of a convenient shape and size for the purpose. The bar is ½ inch in square section and exactly 12 inches in length from the cross piece to the head of the nail, and when the metal is poured into the mold it surrounds the head of the nail, which thus becomes firmly embedded. It is, however, quite free to move, with the bar, in a horizontal direction, and its outer end is attached to the indicating apparatus or extensiometer.

The special form of extensiometer designed for these experiments is shown in Fig. 3. It consists of a brass pointer 28 inches long, which is supported so that it swings freely, but it is kept at rest in a vertical position by the weight W, except when it is deflected during the progress of an observation. The weight insures that the pointer shall follow the slightest movement of the test bar, whether positive or negative. In the apparatus actually employed the movement of the end of the bar was multiplied about fortyfold, but that is a detail which could obviously be varied at will by altering the distance between the point of support A and that of the attachment B to the thin rod which connects the end of the test bar to the lower end of the pointer. As a matter of fact, our instrument was provided with two attachments giv-

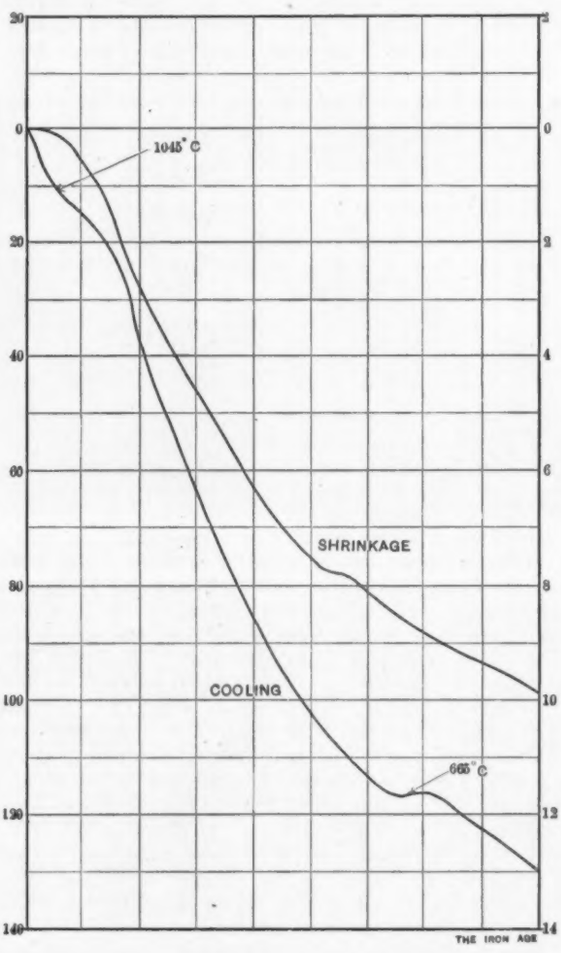


Fig. 5.—Contraction of Pure White Iron.—Left Scale Showing Galvanometer Deflection in Millimeters, Right Scale Shrinkage in Hundredths of an Inch, and Horizontal Squares Showing Time with Each Division Equaling 25 Seconds.

ing different magnification, but a fortyfold increase was, on the average, found most convenient for the present series of tests and with this apparatus.

The pyrometer used was the ordinary Le Chatelier thermo-couple, which was placed bare in the mold so as to be in actual contact with the metal; and the scale divisions from the beam of the galvanometer mirror were read by the eye. For each experiment, therefore, three persons, at least, were necessary: one to record the readings of the extensiometer, another to read the pyrometer scale, and a third to pour the metal into the mold, and give the signal to start observing. Time signals were given by hand tapping each five seconds during the early part of each experiment, the intervals being later increased to 10 seconds, and ultimately to 20 or 30 seconds as the metal cooled. We were thus able to insure the absolute agreement in time of the expansion and cooling curves, which could not otherwise be so readily obtained.

It will be seen from an examination of the accompanying diagrams that the curves obtained may be divided into four classes, depending upon the number of arrests

which are observed in the normal rate of contraction of a cooling solid. The curves given may be regarded as being typical, but a large number of observations have been made with various metals and alloys. The actual shape or slope of curve obtained from a particular material will depend to some extent upon the rate of cooling, and this is affected by the pouring temperature, the size of the bar and the condition of the mold. But though the curve may thus differ in form, within certain limits, the type always remains the same for similar materials, and it is possible, at a glance, to distinguish the type to which the metal belongs. These types are represented in Fig. 4.

1. In the first class of material the contraction curve

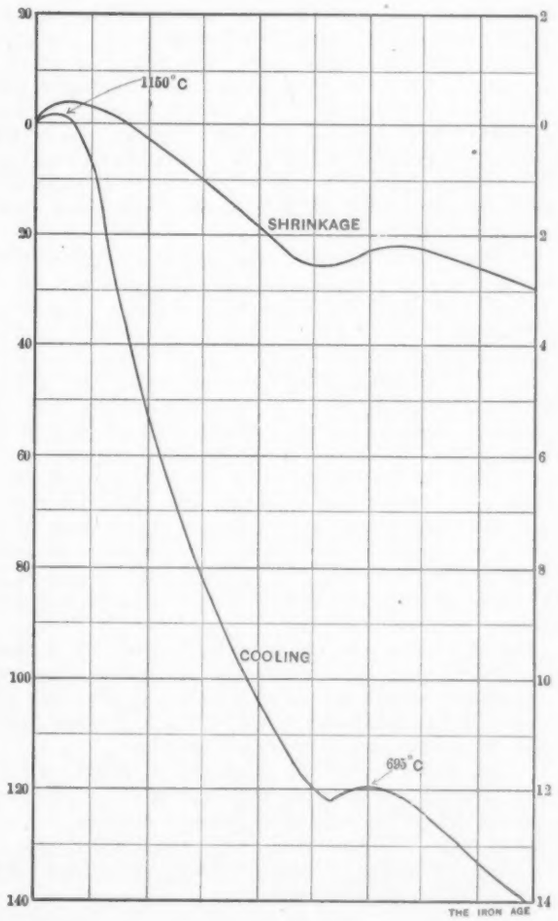


Fig. 6.—Contraction of Gray Hematite Iron.—Left Scale Showing Galvanometer Deflection in Millimeters, Right Scale Shrinkage in Hundredths of an Inch, and Horizontal Squares Showing Time with Each Division Equaling 25 Seconds.

is uniform, and there is no arrest in the decrease of volume as the metal cools. This is represented in the lowest curve on the diagram—namely, that given by pure electrolytic copper. Aluminum, antimony, lead, tin and zinc yield curves of this type. The alloys of zinc and aluminum belong to this class, though it has been stated that alloys of this series expand during solidification.

2. The second class of curve affords indications of one retardation during contraction, which may or may not lead to an actual expansion. White iron is a typical example of this class, to which also (as Mr. Keep has shown) high carbon steel belongs. The zinc-copper alloys belong to this type. Many of the zinc-copper alloys expand during solidification, and some members of the series in an extraordinary manner. So far as I am aware this is a new and important observation, but details of such tests scarcely come within the purview of this institute.

3. The third type of curve indicates that two arrests have occurred in the rate of contraction, and nonphosphoric gray cast iron furnishes an excellent example of this class. Gray hematite gives two marked expansions, one occurring immediately after the metal has become sufficiently solid to cause the indicator to move, and the other after an interval of nearly three minutes, when a ½-inch square test bar is employed.

4. The last class of curve is represented at the top of the diagram, and in this three distinct arrests occur. A very gray phosphoric pig iron gives the most characteristic curve of this type. The second expansion is relatively small in amount, and though the first expansion is large it is not so very pronounced as the third expansion; while, as a result of the three taken together, no less than 4 minutes and 35 seconds after solidification has elapsed with a ½-inch square bar, before it has again reached the original size of the mold, after which contraction proceeds regularly to the atmospheric temperature.

It is now proposed to give particulars of the contraction and temperature changes of a few characteristic examples. For this purpose the following materials were selected.

1. *Pure White Cast Iron.*—The tests were performed on a sample of "American Washed Iron," which is kept as a base for tests of the influence of various elements.

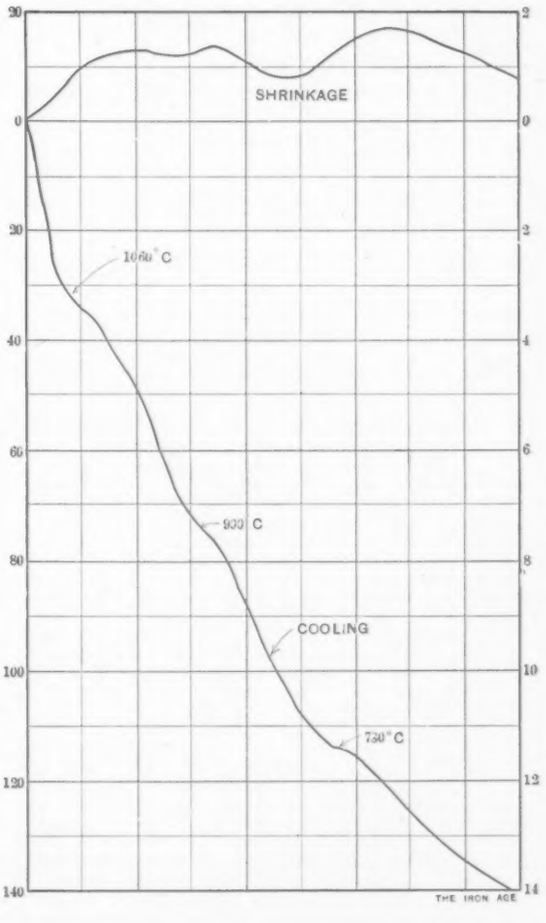


Fig. 7.—Contraction of Gray Northampton Iron.—Left Scale Showing Galvanometer Deflection in Millimeters, Right Scale Showing Shrinkage in Hundredths of an Inch, and Horizontal Squares Showing Time with each Division Equaling 25 Seconds.

It consists of practically pure iron, with about 3 per cent. of combined carbon.

2. *Nonphosphoric Gray Iron.*—For this purpose a No. 3 hematite pig was employed; it was part of the stock used for steel melting in the open hearth furnace in the smelting laboratories of the university. It was somewhat higher in silicon than usual, but this was not in any way an objection for the purposes of these tests.

3. *Phosphoric Gray Iron.*—The sample tested was a No. 1 Northampton (Islip) iron, such as is used for the production of very gray or fluid castings.

4. *Close Grained Good Foundry Iron.*—This metal was from a broken up casting; it was soft and gray, and would give good results for general purposes, so long as the cooling was not too slow.

The composition of these materials was as follows:

	White iron.	Gray hematite.	Northampton.	Cast iron.
Carbon, combined	2.73	0.86	0.15	0.79
Carbon, graphitic	..	2.53	2.60	2.73
Silicon	0.01	3.47	3.98	1.41
Sulphur	Trace.	0.03	0.03	0.07
Phosphorus	0.01	0.04	1.25	0.96
Manganese	Trace.	0.55	0.50	0.43

In each case melting was carefully performed in a covered Stourbridge fire clay crucible, some charcoal being placed in the crucible with the charge to prevent loss by oxidation. The large number of separate test bars were not afterward separately analyzed, as considerable experience with this class of test has shown that the changes which take place in such material under these circumstances are practically negligible. The range of temperature covering the melting points of the metals and alloys examined in the progress of this research was upward of 1000 degrees C., so that no uniformity of pouring temperature was possible. In each case the object was to pour the metal at a heat which would insure the mold being completely filled and allow solidification to begin within a few seconds after pouring. The head of metal was about 2 inches, but the depth of the depression in the head varied very much, according to the shrinkage of samples.

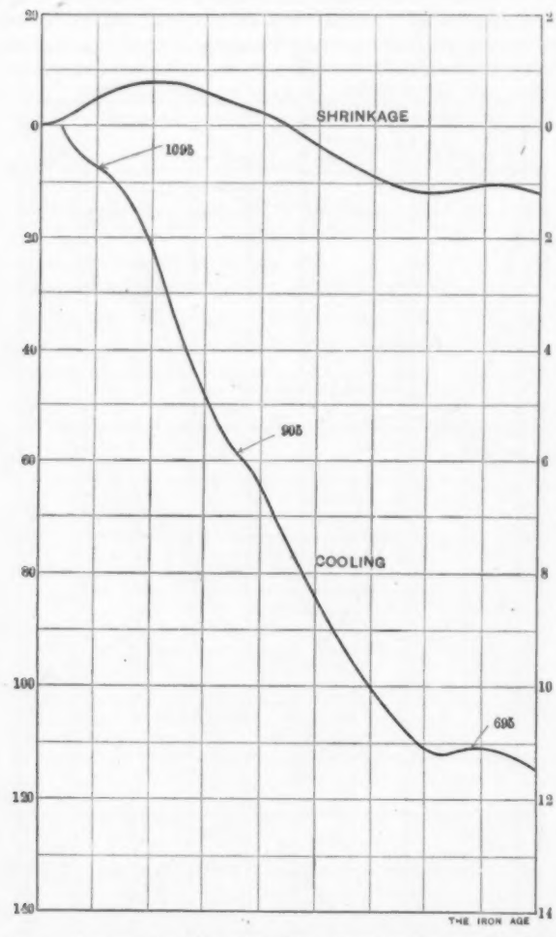


Fig. 8.—Contraction of a Soft Close Grained Iron.—Left Scale Showing Galvanometer Deflection in Millimeters, Right Scale Showing Shrinkage in Hundredths of an Inch, and Horizontal Squares Showing Time with Each Division Equaling 25 Seconds.

An examination of the shrinkage and cooling curves for white iron, given in Fig. 5, shows only one well marked retardation in each curve at about two and a half minuates after pouring, the temperature being about 665 degrees C. There is also a lag in both curves during the first 20 seconds; this lag is probably due to the well-known pasty stage through which white iron passes when solidifying. In the case of white iron there is no actual expansion at any temperature during cooling; the rate of contraction is sharp, and the shape of the curve very nearly that of a normal metal, such as lead, tin or copper.

The curves for nonphosphoric gray pig iron, given in Fig. 6, show, on the other hand, two actual expansions during cooling, and each expansion is accompanied by a distinct rise in temperature. The first of these retardations occurs about 15 seconds after solidification has commenced, and with a temperature of about 1135 degrees C. (the readings taken varying from 1120 to 1150 degrees C.); while the second arrest takes place some two and a half minutes later, and at a temperature of 695 degrees C.

It may be added that the exact temperature of the first arrest is difficult to observe owing to the rapidity of cooling and the short interval of time over which it extends.

The phosphoric gray pig iron, of which contraction and cooling curves are given in Fig. 7, has three actual expansions during cooling and three corresponding retardations in the cooling curve, though these do not appear to give actual rises in temperature. The first arrest reaches its maximum after about 20 to 30 seconds, and at a temperature of 1060 degrees C.; the second occurs after about one and a half minutes, and at a temperature of 900 degrees C.; while the third is very marked and long continued, beginning about two minutes after solidification and lasting for about 160 seconds, the temperature arrest being at 730 degrees C.

It must not be supposed that only sharp and definite curves of the three types above given are met with when dealing with cast iron in everyday practice. Pig irons or foundry mixtures differ widely in composition, and in consequence all kinds of curves are obtained, from Fig. 5 on the one hand to Fig. 7 on the other. The cooling and contraction curves of a soft close grained iron, of which the composition has already been given, will be found in Fig. 8. In this it will be noted that the three retardations in the cooling curve are distinctly indicated, while in the contraction curve the first and third expansions are plainly seen; but the second expansion is faint, and might even be overlooked. Its presence becomes quite evident, however, if a straight edge be applied to the curve, or if the curve be carefully compared with that given by nonphosphoric iron.

As the records were not taken below about 750 degrees C. in the previous experiments, the third retardation was not reached. The remarkable point about this third expansion is the low temperature at which it takes place, when its volume and duration are considered.

In the absence of silicon the change of volume is very small and the temperature 665 degrees C.; with intermediate silicon the expansion becomes marked, and occurs at about 695 degrees C.; with about 4 per cent. of silicon the expansion becomes very large indeed, and takes place at about 730 degrees C.

In conclusion, it may be pointed out that the observation of the changes of volume which take place during the solidification and subsequent cooling of cast iron affords the iron founder a ready means of checking and controlling his foundry mixtures. The apparatus is such as can be made by any intelligent mechanic; the actual observation does not require any special skill, and can be completed in about 20 minutes; while the curves when intelligently interpreted afford information as to the chemical composition, the hardness, and the strength of the metal which is, so far as I am aware, supplied by no other singe test. These curves should also settle forever the old controversy as to which metals, if any, expand during solidification, and why in certain cases a piece of cast iron, or other metal, will float on the surface of a molten bath of the same material.

For ratchet drilling the high speed drills will not of course cut faster than will the drill made of ordinary tool steel, but there is, nevertheless, a distinct gain found in using the high speed drill in that it does not require to be ground so often. A special form of flat high speed drill for rail drilling has a record of 1600 1-inch holes in 80-pound rails without regrinding, where 50 holes with the ordinary drill would have been considered a good performance. Another striking example was a comparison made in the New York Navy Yard, where one of these drills cut ten 1¼-inch holes in turret armor plate while eight twist drills of carbon steel were used in finishing one hole of the same size.

The Thor Pneumatic Tools.

Many novel features and improvements have been incorporated in the new line of pneumatic drills and hammers manufactured by the Independent Pneumatic Tool Company, Chicago. This company acquired the plant of the Aurora Automatic Machine Company at Aurora, Ill., last year, but the manufacturing facilities afforded have already proved inadequate to meet the growing demand for the tools. In designing this line efforts have been made to strengthen the parts, to reduce the air travel and to construct the tools in such a way that all parts would be readily accessible. The drill cases are of cast steel and have been reduced to two parts, while the long stroke riveting hammers are drop forged in one piece, which gives greatly increased strength.

The building devoted to the manufacture of these tools is 50 x 152 feet and five stories high, and several of the floors are devoted to the manufacture of gasoline engines for motor cycles. Two floors have already been engaged in an adjoining building, on account of the extensive increase in the business, and $50,000 worth of new machinery has been purchased and is being installed as rapidly as it is shipped.

The telescopic interchangeable feed compound gear and Corliss valve arrangement are the important features of the Thor nonreversible and reversible drills shown in Figs. 1 and 2. Compressed air is admitted to four single acting cylinders in the body of the drills and is controlled by means of Corliss valves, these being shown in the section through A-B, Fig. 1, each valve operating two cylinders. The air ports from the valves to the cylinders are shown at *x* and *x*, and it will be noted that the distance of air travel is exceedingly small, resulting in almost instantaneous action upon the pistons, with practically no loss of pressure. The valves are timed in their operation so that the port of one opens before the other one is cut off. The live air chamber is shown at *y* and the pistons at *z* and *z*. The valves permit almost any speed, on account of the quick exhaust and the short travel from the cut off to the cylinder. The eccentrics operating the valves are on the crank shaft, as indicated at *a* and *b* in the vertical section. The connections to the valves may be seen in the plan view with the gear case removed. The bearings of the crank shaft are placed close to the cranks, which makes a saving in the total length of the motor.

The telescopic feed shown in Fig. 1 consists of three parts—an inner feed screw *c*, an intermediate sleeve *d*, both internally and externally threaded, and a stationary sleeve, *e*. The inner feed screw feeds the body of the drill down until the screw reaches the end of the threaded part on the interior of the intermediate sleeve, and the latter unscrews until it reaches the end of the threaded part of the stationary sleeve. This gives a feed practically double that which can be obtained with an ordinary single feed rod. When in use it is impossible for the rod or the sleeve to come entirely out, but the entire feed mechanism can be removed by removing the nut holding the stationary sleeve in place and a grip handle such as is shown in Fig. 2 can be substituted. The telescopic handle is used for feeding the drill in iron and steel work and the grip handle for wood boring. The pin shown at *k* in Fig. 2 is used in extracting the tool, this being done by simply screwing down the nut shown at the base of the handle.

The compound gear in Fig. 2 brings about a reduction in the speed of 3½ to 1 and increases the power in the same ratio. The pinion *a* is secured to the main crank shaft and meshes with gear *b*, which is keyed to the sleeve *c*. The latter has gear teeth which mesh with idler gears *e* and *f*, which in turn engage an internal gear, *d*. The tool holder *g* has arms, *h*, with studs, *i*, which support these idlers.

The reversible drill has two admission air chambers instead of one, as in the nonreversible, which are shown at *l'* and *l'* in Fig. 2. The reversing motion is secured by sending the air through the exhaust port into the valve chamber and thence into the cylinders instead of by the usual route. A small two-way valve, which is placed in the admission chamber at the inner edge of the inlet pipe in the live air handle, determines the direction of rotation. The motor is readily accessible, and by removing the exhaust caps either valve may be taken

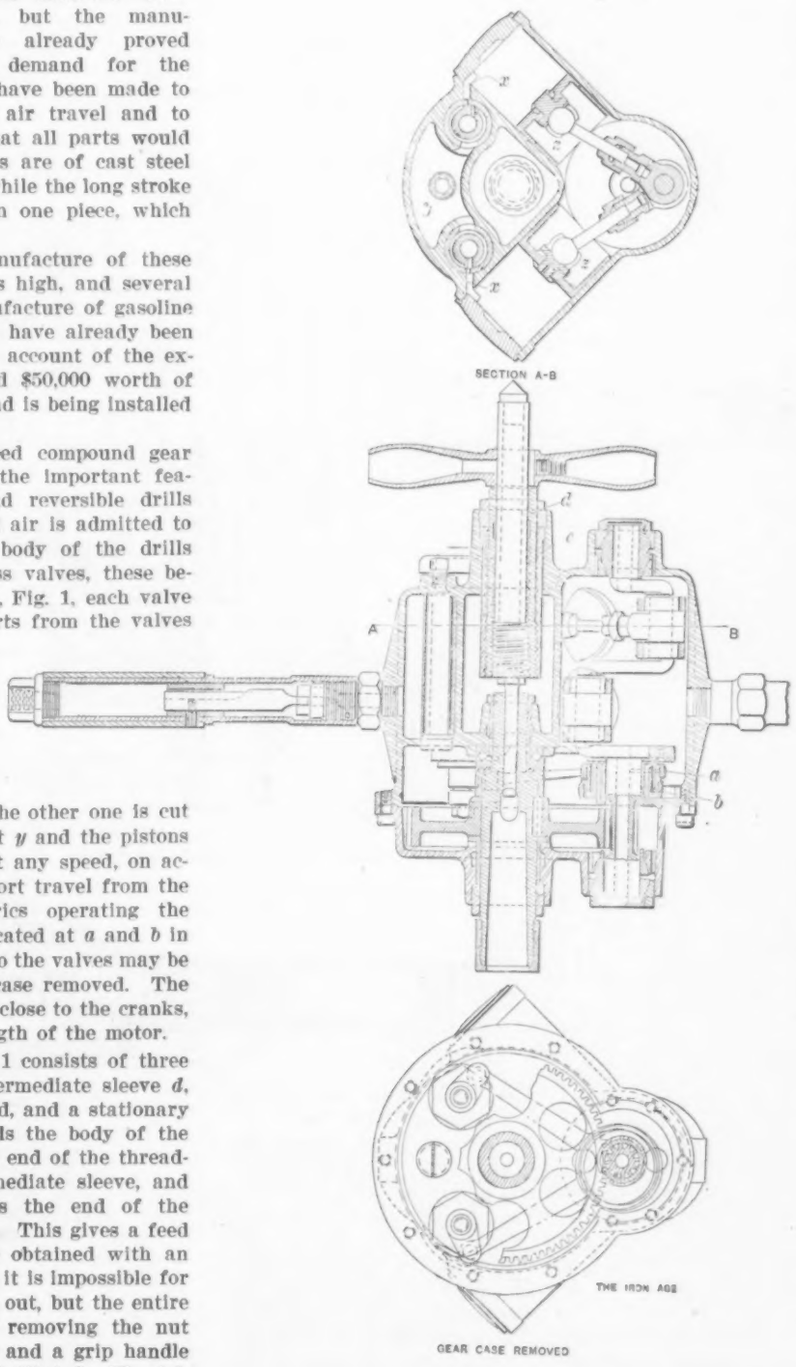


Fig. 1.—Details of the Thor Nonreversible Drill, Made by the Independent Pneumatic Tool Company, Chicago.

out without disturbing any of the motor parts. The pistons may be removed by removing the cylinder heads, and the connecting rods may be taken out through the cylinder bore without disturbing any part except the pistons. By removing the gear case all the other parts of the tool are accessible. The case of the motor is cast steel, made with but one joint. All wearing parts are either steel forgings or are turned from solid steel stock. These drills are made in 17 sizes.

The Thor wood boring machine shown in Fig. 3 has a compound gear, which gives two speeds of 1500 and 750 revolutions per minute, respectively. The reversible feature in this machine is the same as in Fig. 1. For the high speed, pinion *a* drives gear *b*, which is keyed to the

counterspindle *c*. The latter has a slidable double pinion, *d*, the large pinion of which meshes with the small gear *e* on the tool holder, and the small pinion with the gear *f* on the tool spindle. Shifter *g* straddles the large pinion on *d*, for shifting the double pinion. Moving the latter so that the small pinion meshes with the gear *f* gives the low speed.

Fig. 4 shows two sections of the Thor long stroke riveting hammer. The cylinder, handle and valve chambers are drop forged in one piece, which is bored, turned and drilled. The valves of this hammer are particularly interesting, consisting of one main valve and an auxiliary valve. The main valve shown at *a* is parallel with the cylinder, and the valve chamber is located at one side. These valves are of the differential piston valve type. The auxiliary valve has been introduced to reduce the vibration. In starting the hammer the plunger moves rearward, the exhaust is cut off and the dead air in the handle forms a cushion which opens the auxiliary valve. This then admits a small amount of air to start the hammer forward on the power stroke. Soon thereafter air is admitted to the main valve, shifting it to admit the main charge for the power stroke, and as soon as the plunger reaches the forward end of the barrel the live air shifts the main valve and auxiliary valve to cut off the charge. When the plunger starts rearward the operation is repeated.

The duplex valves are the interesting features of the chipping hammer shown in Fig. 5. In designing this hammer it was the intention to secure small and at the same time strong valves to admit the power charge. Live air enters the hammer at *b*, between the two valves *a* and *a*, pressing them apart, allowing the air to enter behind the plunger. This drives the latter forward, and when it is near the forward end of the barrel the recess or neck shown on the plunger connects the live air port *c* with ports *d*, which lead to the outside of the valves, and as the area of the outer sides is larger than that of the inner the excess pressure causes the valves to close. Air is then admitted to the opposite side of the plunger through a port, not shown, driving it back until the distant openings from the ports *d* are uncovered, releasing the pressure on the large ends of the valves, when the valves will again be forced apart, thus repeating the operation.

Fig. 6 shows a grinding attachment, which can be applied to small drills by removing the gear case and small spindle. This cover, with grinding spindle support, is then attached in place of the gear cover. The spindle with the grinding wheel is driven direct from the crank shaft; a tongue in the crank shaft slides into a recess in the spindle, driving the emery or grinding wheel, and a speed of 2500 revolutions per minute is easily attained.

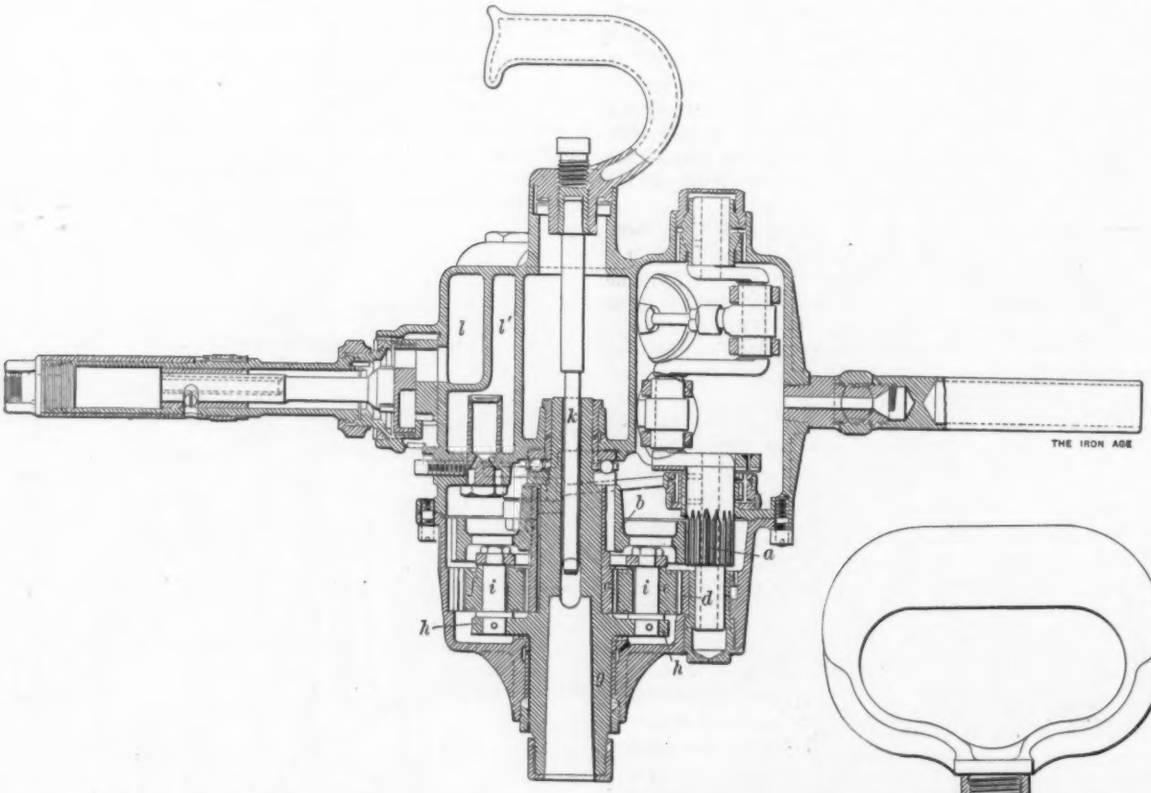


Fig. 2.—Section of the Thor Reversible Drill with Compound Gear Drive.

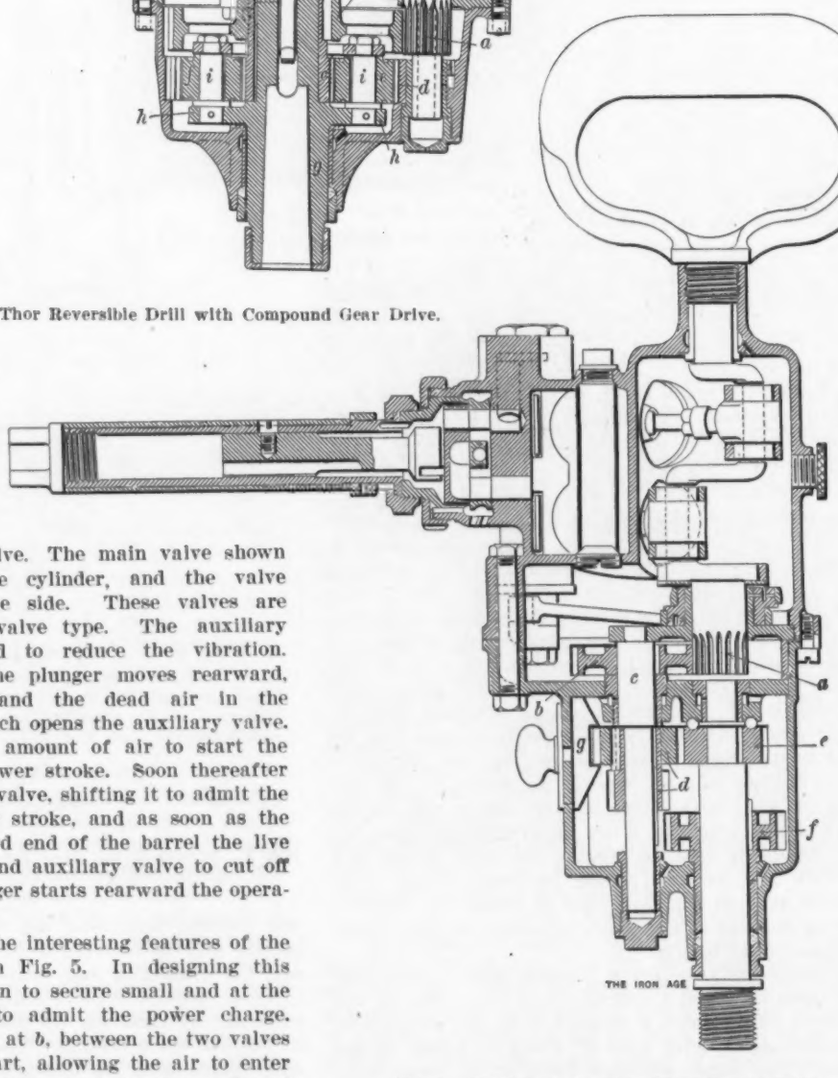


Fig. 3.—Section of the Thor Wood Boring Drill.

Five different sizes of pneumatic drills are shown in operation in Fig. 7, drilling holes 3 inches in diameter and smaller in solid cast iron blocks. The largest drill is driving the 3-inch bit. In common with the style described in connection with Fig. 2, this drill has a train of compound gearing, and was the first drill of this type placed upon the market, as well as the most powerful pneumatic drill ever sold. The compound gearing multiplies the power, and with a 3-inch twist drill it will work to its full capacity, requiring about 45 pounds air pressure to the square inch. It is built to take a 4-inch twist drill and will drive a 6-inch fly cutter through

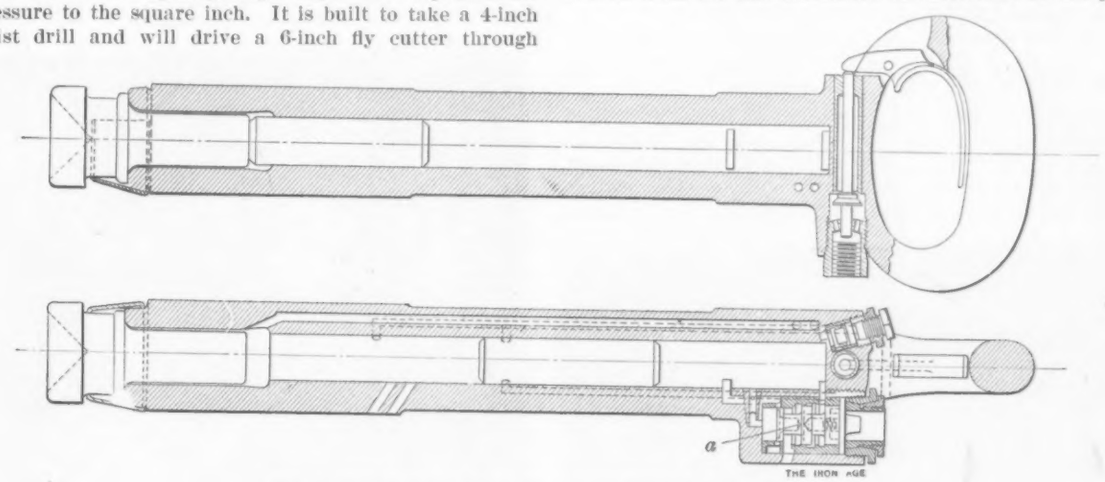


Fig. 4.—Two Sections of the Thor Long Stroke Riveting Hammer

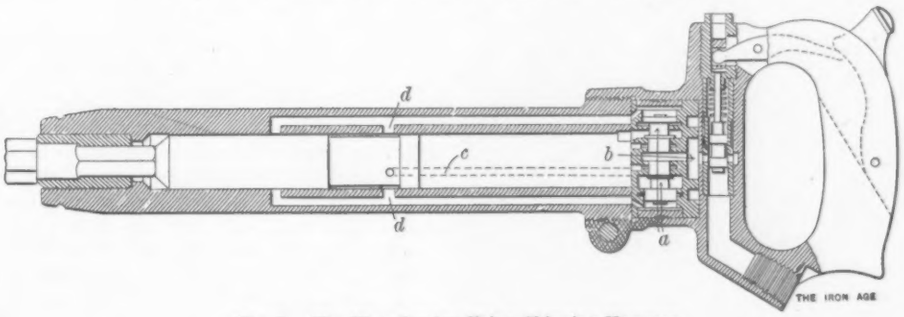


Fig. 5.—The Thor Duplex Valve Chipping Hammer.

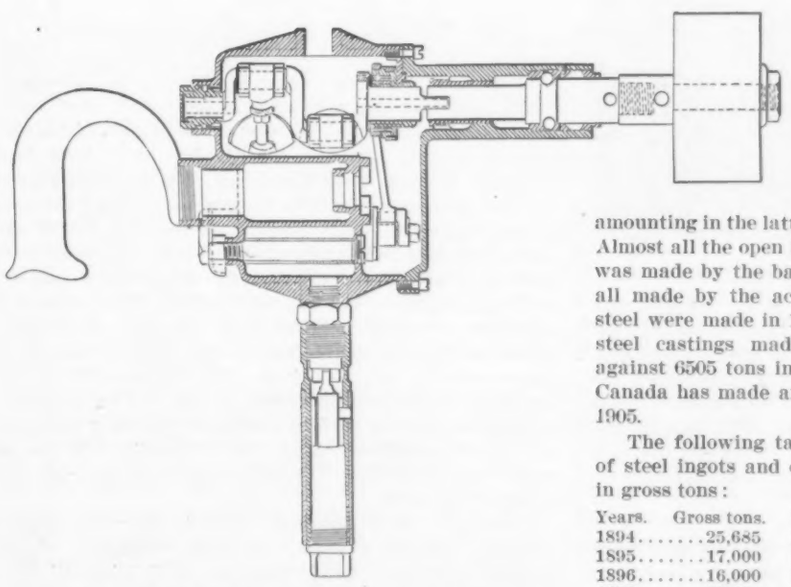


Fig. 6.—A Grinding Attachment for Small Drills.

boiler plate. It weighs between 50 and 55 pounds and the compound gearing adds but 1⅝ inches to the depth of the gear case.

Kingsway and Aldwych, the avenue recently opened in London at a cost of about $30,000,000, is three-quarters of a mile long and except for a short distance, where the width has been reduced to 80 feet, is 100 feet wide. The roadway is 60 feet wide and each sidewalk 20 feet. Under the center of the roadway is a double track electric railway, with a pipe gallery and sewer at each side. Under the inner portion of the sidewalk are the house vaults, with connections made at frequent intervals by conduits to the pipe gallery.

The Canadian Iron and Steel Production.

The American Iron and Steel Association has received from the manufacturers the statistics of the production of steel ingots and castings and of finished rolled iron and steel in the Dominion of Canada in 1905, which was much the largest in its history. Bessemer and open hearth steel ingots and castings were made in both 1904 and 1905, the production of open hearth steel amounting in the latter year to over 59 per cent. of the total. Almost all the open hearth steel reported in 1904 and 1905 was made by the basic process. The Bessemer steel was all made by the acid process. A few hundred tons of steel were made in 1905 by a special process. The direct steel castings made in 1905 amounted to 9394 tons, against 6505 tons in 1904. The records do not show that Canada has made any crucible steel down to the close of 1905.

The following table gives the production of all kinds of steel ingots and castings in Canada from 1894 to 1905 in gross tons:

Years.	Gross tons.	Years.	Gross tons.	Years.	Gross tons.
1894	25,685	1898	21,540	1902	182,037
1895	17,000	1899	22,000	1903	181,514
1896	16,000	1900	23,577	1904	148,784
1897	18,400	1901	26,084	1905	403,449

The following table gives the production of all kinds of iron and steel rolled into finished forms in Canada from 1895 to 1905 in gross tons:

Years.	Gross tons.	Years.	Gross tons.	Years.	Gross tons.
1895	66,402	1899	110,642	1903	129,516
1896	75,043	1900	100,690	1904	180,038
1897	77,021	1901	112,007	1905	385,826
1898	90,303	1902	161,485		

The production of Bessemer and open hearth steel rails in 1905 amounted to 178,885 gross tons, against 36,216 tons in 1904; structural shapes, 885 tons, against 447

tons in 1904; nail and spike plate, 4110 tons, against 5030 tons in 1904; plates and sheets, 4944 tons, against 3102 tons in 1904; all other finished rolled products, excluding muck and scrap bars, blooms, billets, sheet bars and other unfinished forms, but including for 1905 1120 tons of forging blooms or forging billets, 197,002 tons, against 135,243 tons in 1904.

Of the 385,826 tons of finished iron and steel reported for 1905 about 318,405 tons were rolled from steel and 67,421 tons from iron, as compared with 126,850 tons rolled from steel and 53,188 tons from iron in 1904.

In 1905 Canada produced approximately 366,800 kegs of cut nails and wire nails, as compared with 324,000 kegs of cut nails and wire nails in 1904.

On December 31, 1905, there were 21 completed rolling mills and steel works in Canada; also one was being built and two were projected. Of the completed plants three were equipped for the manufacture of steel castings only, one for open hearth steel ingots only, five for Bessemer or open hearth steel ingots and rolled products and 12 for rolled products only. The building plant was being equipped for black plates and tin plates and terne plates. One of the projected plants is to be equipped for skelp and bar iron, and the other for wire rods. Of the completed works four were located in Nova Scotia, five in Quebec, ten in Ontario, one in New Brunswick and one in Manitoba. The single building plant and the two projected plants are in Ontario.

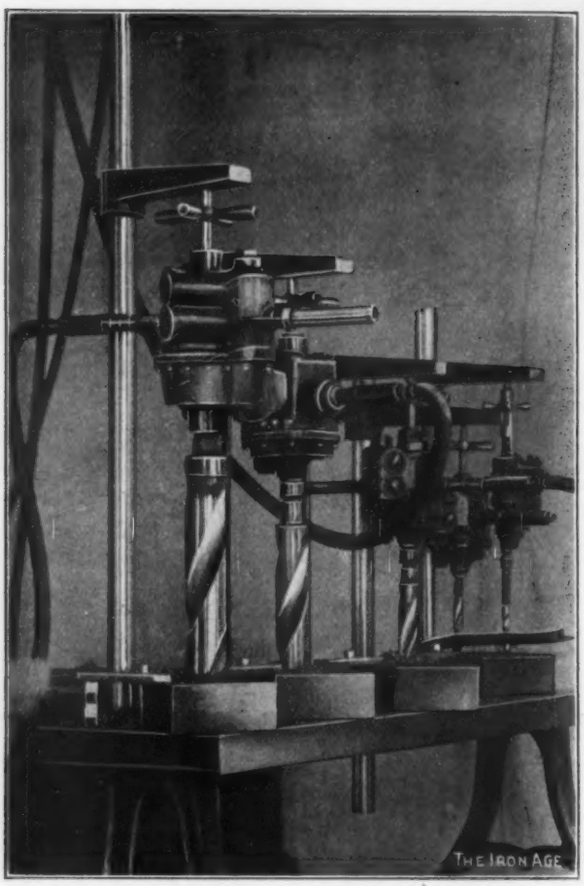
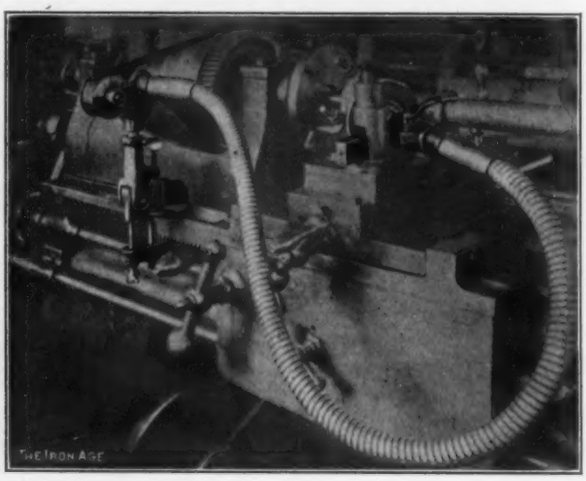


Fig. 7.—Five Sizes of Thor Drills in Use.

Two parts of aluminum and one part of zinc form an alloy to which has been given the name "alzene." It is equal in strength to good cast iron and superior to it in the matter of elastic limit. It takes a fine, smooth finish and does not readily oxidize. The color is white. It melts at a low red heat and is very fluid, running freely to the extremities of the mold and filling small or thin parts. Great care must be exercised in melting it, particularly when mixing the two metals, in order to preserve its smooth working qualities. It is somewhat brittle and hence unsuited to such pieces as require the toughness possessed by brass. The tensile strength is approximately 22,000 pounds per square inch and 3.3 is the specific gravity.

The Coates Lathe Grinder.

The device herewith illustrated is intended for grinding work while the latter is being revolved in a lathe, examples of this class of work being cones, reamers, cutters, arbors, lathe centers and plugs. The grinder gets its power direct from the large step of the cone pulley of the lathe to which it is attached. It will be noticed that there is a peculiar arrangement in the drive involving two driven pulleys, one of these being an idler, while the other is attached to the flexible shaft leading to the grinding wheel. The whole purpose is to drive the wheel in the necessary reverse direction without using a crossed belt, which would require greater distance between centers. The wheel end of the attachment is supported when in use in the tool post of the lathe. This lathe grinder is especially useful in supplying the facilities for light grinding work in small shops and is made by the Coates Clipper Mfg. Company, Worcester, Mass.



A Lathe Grinding Attachment Made by the Coates Clipper Mfg. Company, Worcester, Mass.

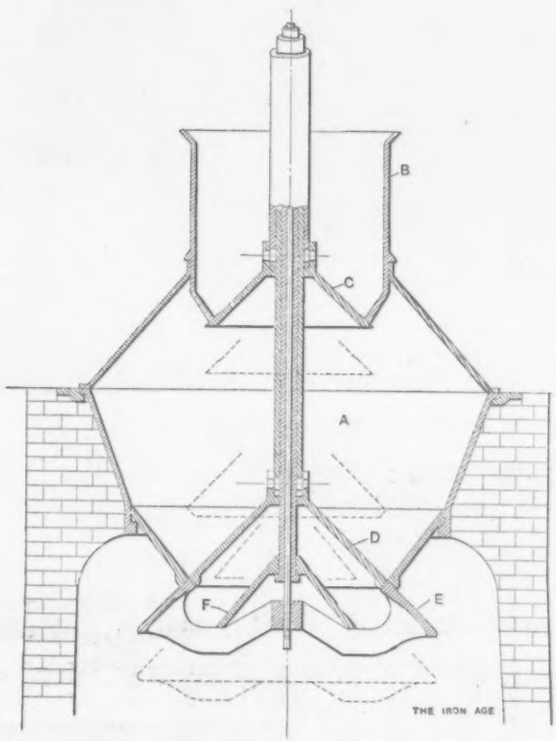
An Exhibit of Foundry Equipment.

A feature of the convention of the American Foundrymen's Association at Cleveland, June 5 to 7, that is expected to attract much attention is an exhibit of foundry supplies and equipment. Already 30 spaces have been arranged for and other firms will probably be added to the list, making the exhibit the largest of the kind ever brought together. The Central Armory, in which the convention will be held, is 120 x 207 feet, and practically the entire area will be taken by the exhibits and the convention space which they will inclose. The convention will thus be almost literally in a foundry. A 55 horsepower gas engine will operate a line shaft, from which power exhibits will be driven. The engine will also be connected to an air compressor, which will furnish compressed air for the various pneumatic molding machines and other appliances. A number of exhibits will also be driven by electricity. The following firms have already arranged for space:

Berkshire Mfg. Company, Detroit Foundry Supply Company, Diamond Clamp & Flask Company, W. W. Lindsay, Interstate Sand Company, C. E. Mills Oil Company, Hill & Griffith Company, McPhail Molding Machine Company, Chisholm & Moore Mfg. Company, Arcade Mfg. Company, Cleveland Wire Spring Company, Western Foundry Supply Company, B. F. Sturtevant Company, Holland Linseed Oil Company, Falls Rivet & Machine Company, Standard Sand & Machine Company, W. W. Sly Mfg. Company, Miriam Bruce Abbott Gas Engine Company, Chicago Pneumatic Tool Company, Tabor Mfg. Company, Crescent Machine Company, Goldschmidt Thermit Company, Electric Controller & Supply Company, William Dobson, J. D. Smith Foundry Supply Company, Osborn Mfg. Company, E. H. Mumford & Co.

A Blast Furnace Charging Apparatus.

John W. Dougherty, general superintendent of the Pennsylvania Steel Company at Steelton, Pa., has invented a blast furnace charging apparatus in which the construction of hoppers and bells is such that the stock may be deposited in the furnace at will in any one of three different zones of deposition. The illustration indicates in the main the features of the invention. A is the charging hopper and B a supplemental hopper situated above it. The supplemental bell C has to be lowered to pass the contents of the supplemental hopper B into the main hopper. The bell, which closes the opening at the base of the main charging hopper, constitutes the leading feature of the invention. It is composed of two sections fitted to each other so that when actuated together they perform the functions of the usual charging bell. The bell section E, which comprises the lower part of the charging bell, forms with the section D a practically continuous cone. The lower section is provided with a spider consisting of a set of radial arms and a



Dougherty Blast Furnace Charging Apparatus.

hub attached to a hanger, which extends upward through other tubular hangers to the mechanism employed for actuating the charging bell. By the simultaneous lowering of their respective hangers both sections of the charging bell descend together, providing an opening through which the stock will drop and be deflected toward the walls of the furnace.

When much fine ore is used it is important to have the stock distributed with great care for uniformity, so that the surface of the stock after deposition may be as nearly level as possible. It is also desirable at times to deposit fine ores near the center of the furnace and the lumpy portions near the walls so as to prevent "hangs." Central deposition of the stock is secured in the following manner: The operator raises only the upper section D of the charging bell, not moving the lower section E. This leaves an annular opening through which the stock will drop and be deflected toward the center of the furnace, passing between the radial arms of the lower bell section D. These have a deep vertical cross section and slight breadth, thus avoiding obstruction of the stock as it passes into the furnace.

When it is desirable to deposit a portion of the stock in an intermediate annular zone between the central zone above referred to and the exterior zone adjacent to the walls of the furnace, a deflector F is employed. In the operation of depositing the charge near the walls of the furnace this deflector remains in the position shown in the illustration. When stock is being dropped into the central zone the deflector F, prior to the raising of the upper bell section D, is raised up near to the latter and kept in close proximity to it, as indicated by dotted lines. For deposition in the intermediate zone the deflector is placed in the position shown in the figure, rested on the arms of the lower bell section E, while the central bell section D is raised. The descending stock will be deflected from the center of the furnace and deposited in an intermediate annular zone.

A Method of Rolling Sheets Without Doubling.

In the usual process of rolling iron and steel sheets, as is well known, it is customary to "double," or place together, first two, then four, then eight sheets as they pass through the mill. Otherwise as the sheets grow thinner they would lose their heat so rapidly that they would not be workable. There are frequent reheatings, with the wasting of the heat still in the metal at its last passage through the rolls and a considerable loss of time in conveying the material to and from the furnace. One result of the doubling process is that the surfaces of the sheets are not smooth, and to make them so a subsequent process of cold rolling is gone through with. In view of these conditions, William Kent of Covington, Ky., has invented a "hot system rolling mill," which makes use of two portable furnaces placed close up to the rolls, one on either side. A set of three high rolls of the usual construction and mounting is provided. The furnaces are built of fire brick and have a casing of metal.

In the interior of the furnace the inventor proposes to have two chambers, one above and one below, separated by bars extending longitudinally through the furnace and supported at intervals by crossbars, to allow the flames completely to surround the sheet. At the front end of the furnace are two slits for the egress of the hot sheets. The platform of the top chamber is arranged with an opening so that sheets may be slid from the upper to the lower chamber, and another opening at the front allows the sheet to be introduced from the front into the lower chamber. The proposed method of operation, as described by the inventor, is substantially as follows:

The sheets, having been heated in the ordinary furnace, are loaded into the portable furnaces through a slit at the back and a pile is made in each chamber. The two furnaces are then brought close up to the rolls, that a sheet may be run out under the middle roll and guided into the lower chamber of the opposite furnace. It may be immediately run back over the middle roll, or may be left in the furnace longer if greater heating is necessary. There are several ways in which the sheets may be passed through the various chambers or through the rolls. The preferable way is to run one sheet through the upper rolls, while at the same time another sheet runs through the lower pass. One operator can shift the sheet each time from the upper to the lower section of the furnace, or vice versa, by means of a tool introduced at the rear.

It is claimed that this method of procedure obviates the necessity of taking the pile of sheets back to the stationary furnaces, avoids their getting a fold, avoids doubling and makes it possible to roll very thin sheets. The sheets can also be annealed without reheating, by allowing them to remain in the furnace the required time. The inventor says that his process saves the employment of three men and doubles the output.

Bearing Metals and the Advance in Tin.—A correspondent of the London *Times Engineering Supplement* writes: "The enormous and unprecedented price of tin is becoming a very serious matter to the makers of bearing metals, who find their costs of production greatly enhanced, while finding it difficult, if not impossible, to recuperate their losses from the customer. Under these circumstances I venture to inquire whether it would be possible to utilize a combination of lead and bronze for the same purpose. It is quite clear that if tin permanently assumes the position of a precious metal some substitute must be found for the materials now in use."

The Backstrom-Smith Steam Turbine.

The successful testing recently of the first Backstrom-Smith turbine in the Oneida street plant of the Milwaukee Railway Company may be taken as marking an important step in turbo-engineering. The importance of this turbine lies in the fact that it operates under constant stage pressures in varying quantities to suit varying loads from the maximum down to the minimum and that it is instantly available for either condensing or noncondensing work, the output of the machine remaining unchanged. Other features of this machine, no less important, are the simplicity of its mechanism and the ingenious methods of construction which make it commercially capable of competing with other forms of prime movers in economy, first cost and maintenance expense.

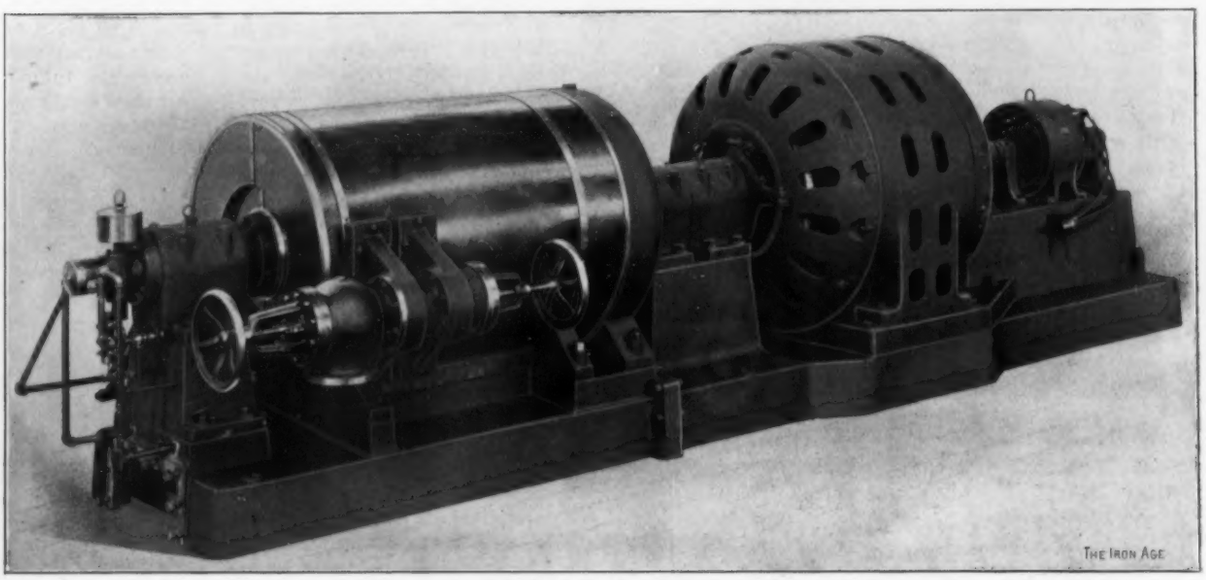


Fig. 1.—The Backstrom-Smith Steam Turbine Direct Connected to a Western Electric Alternator and Exciter.

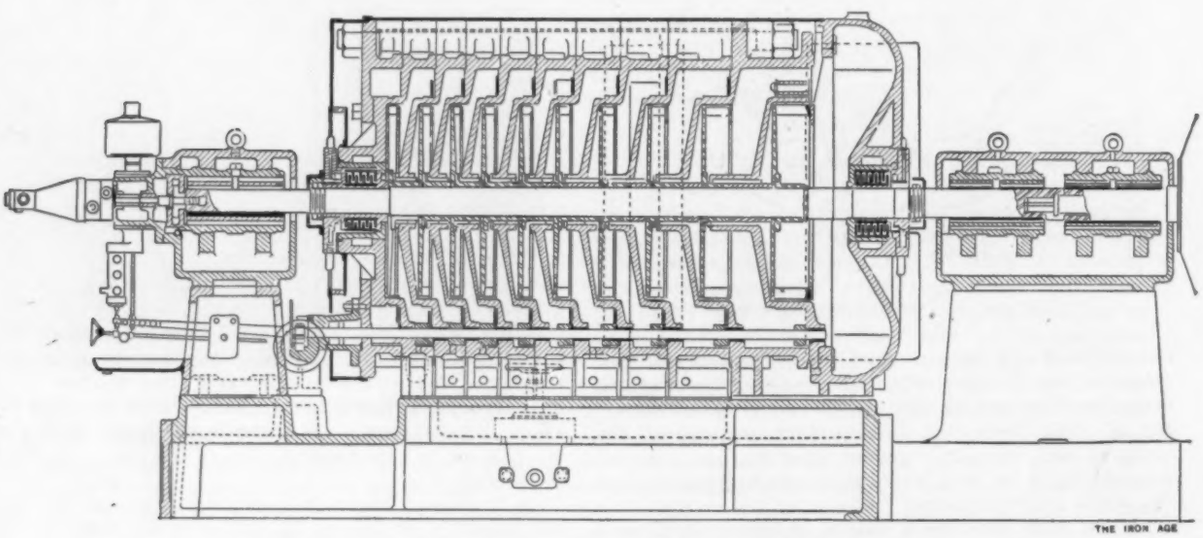


Fig. 2.—Longitudinal Vertical Section of the Backstrom-Smith Steam Turbine.

In a general way the Backstrom-Smith steam turbine may be described as multicellular of the inflow type (independently proposed and developed by C. A. Backstrom). A general view of the turbine coupled to an alternator and an exciter is shown in Fig. 1. Fig. 2 gives a longitudinal vertical section through the turbine alone, and Fig. 3 a transverse section through one of the runners and a section of the inlet nozzles.

To do for the turbine what the Corliss valve did for the reciprocating engine this turbine, for the first time in the art, it is claimed, is provided with means for meeting the requirements of changing loads without throttling, making it nearly as economical for light loads as for the heaviest. The mechanism by which this is accomplished is most unique. Flexible steel bands are secured to the periphery of the nozzle sections and to spools or rollers, Fig. 4, mounted on a collar or ring, which has a limited rotary travel around the housing, inside of which each turbine wheel revolves. A movement of this collar winds or unwinds the steel tape on each of the spools, uncovering or covering the series of nozzles or ports, which admit steam to the active buckets of the turbine wheels. This winding or unwinding of the steel tape is done automatically, the device being so arranged that the flow of steam is always in proportion to the load, steam entering the different stages at a predetermined and constant pressure, but in varying quantities, depending upon the number of nozzles covered or uncovered by the steel tapes. The mechanism for this automatic regulation is operated from a shaft running the length of the turbine in the bottom of the housings. At intervals on this shaft are keyed pinions, which engage corresponding teeth cut in the ring or collar, on which the several tape rollers are mounted, these rollers engaging with short racks secured to the nozzle ring or housing. The minutest motion of the shaft results in winding or unwinding the tape on the rollers, thus closing or opening more or less of the nozzles. The motions of the shaft operating this ingenious cut off mechanism are controlled by the governor shown at the left in Figs. 1 and 2. The governor controls a flow of oil under constant pressure, which

through a pressure cylinder and a rack and pinion rotates the shaft in one or the other direction. The governor is dependent upon the proper action of the lubricating mechanism, as any accident to the latter results in an automatic stopping of the turbine, thus insuring the machine against self destruction.

In addition to this governor, with its two important functions, a safety device is provided in the shape of a safety governor controlling a butterfly valve, which closes automatically when the turbine speed reaches 5 per cent. above the normal, but is otherwise inoperative.

In the size illustrated (400 kw.), recently tested in the Oneida street plant of the Milwaukee Electric Railway Company, there are ten turbine wheels or runners, the general form of which is shown assembled and partly assembled in Fig. 5. This figure illustrates a runner in one of the earlier stages, the bucket face of each successive wheel being wider. All the runners have an equal number of buckets of a uniform cross section. This feature applies as well to the nozzles.

It is the claim of the inventor that superheated steam is not as essential to the economical operation of the Backstrom-Smith turbine as to that of others. It is held that there is a minimum of condensation, because of the constant pressure and temperature maintained at all loads in all the stages of the turbine. The next contention is that all the water contained in the steam is separated from it, and that this water which is shifted or drained into the succeeding stage by automatic means is at once in part, if not wholly, re-evaporated, thus becoming useful energy. Again, by using high steam velocities claim is made that surplus velocity appears in the form of superheat, which greatly reduces internal condensation and skin friction. As an illustration, steam at 150 pounds gauge pressure reaches the first stage of the turbine at a temperature of 366 degrees F. Any water contained in this steam (having naturally the same temperature) is separated from it, falling to the bottom of the stage chamber, from which it passes through an automatic device into the second stage, where the pressure is, say, 91 pounds and the temperature 332 degrees F. An instantaneous evaporation naturally follows from these differences in pressures and temperatures.

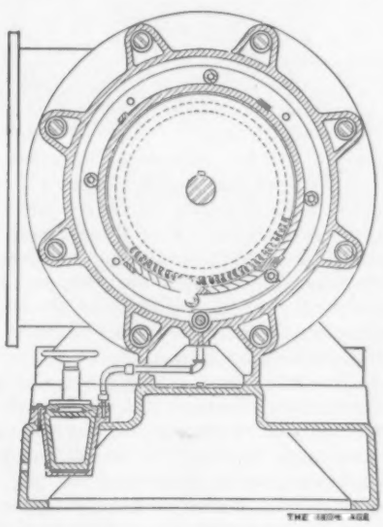


Fig. 3.—Section at Right Angles to that of Fig. 2.

A Backstrom-Smith turbine built and installed for use in connection with a condenser is arranged so that it may be quickly converted into an economical noncondensing type should the condensing apparatus get out of order or become inoperative. This is done by providing an auxiliary exhaust at a point favorable for exhaust to atmosphere. This early exhaust relieves the turbine from a certain amount of back pressure, which would arise from forcing a large volume of already fully expanded steam through a number of useless and idle turbine wheels, causing a considerably reduced efficiency and other unfavorable effects. Both exhaust connections are on the opposite side of the turbine to that shown in Fig. 1. The auxiliary exhaust is somewhat narrower than the exhaust to the condenser and is located nearer the center of the turbine. A permanent provision for operation under overload with or without condenser is provided through the valve shown at the right in Fig. 1. This valve may be operated by hand or it may be under direct control of the governor.

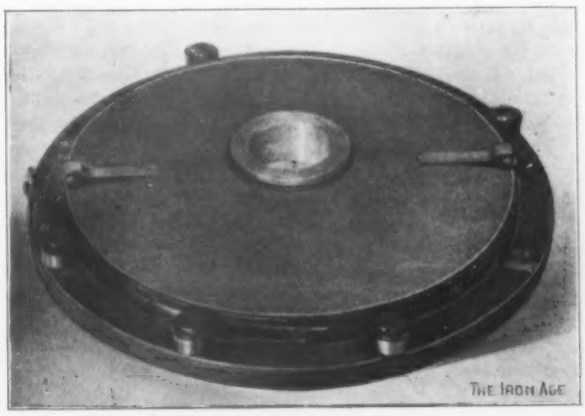


Fig. 4.—A Nozzle Ring and Its Associated Parts Removed.

As intimated at the outset it is the endeavor to place this turbine on the highest commercial basis by devising economies in construction, and the builders have in operation a system by which the buckets for each of the wheels are cast in sections, all machining of these difficult and important parts being dispensed with. This is accomplished in a clever way. By the liberal use of fine polished, noncorrosive nickel steel they have succeeded in producing in a very practical way an inexpensive and effective casing for runner buckets, as well as linings for nozzle openings, cast into attachable sections, as shown in Fig. 5. Assembling is facilitated by the fact that the turbine is made in separate, independent, standardized sections, easily bolted to each other in erecting. The usual practice of making parts in halves is not resorted to, and yet any part is readily accessible and can be easily replaced when repairs are necessary. The method of using noncorrosive steel of polished surface for steam way linings and bucket casings, and in fact the idea of steam turbine construction, shows deep penetration into the subject and intelligent application of modern practices.

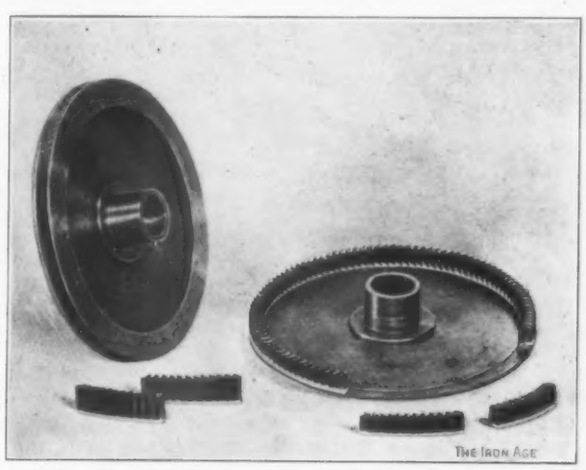


Fig. 5.—A Complete and a Partly Assembled Wheel.

The builder, the Backstrom-Smith Steam Turbine & Mfg. Company, Milwaukee, Wis., is now prepared to take orders for short delivery for units not less than 400 kw. nor more than 2500 kw. A new type of alternator, recently perfected by the Western Electric Company, will be used in connection with the turbine.

San Francisco's Rehabilitation.

SAN FRANCISCO, May 12, 1906.—The overwhelming nature of our recent calamity cannot be adequately depicted by pen or pencil. This should have been one of the active periods of the year. Instead, nothing can be done in the hardware or machinery line till fresh supplies have been obtained from the East. The first thing to be done was to feed the people and they have still to be fed. Necessarily provision trains monopolize the railroads and will continue to do so for a considerable time. There are 300,000 people here out of our former population of 460,000, the balance having left the city, but a great part of them are simply camped around Oakland, Berkeley, &c., and have to be taken care of just the same.

It will take about a year to get the city into anything like ship shape. Before that time business will probably have been resumed in its entirety, but it will take till then to get up buildings worthy of the new city. If we should be spared further ravages of fire and earthquake a wonderful change will then have come over the four square miles of ruins that now greet the eye. The task of rebuilding the city as fast as it can be done will concentrate here an immense army of workers, who will be employed at good wages and who will make things lively in every department of human endeavor.

The matter of insurance is being settled, and though for a little while technical points may be raised by the representatives of some of them, there is no question that the insurance companies affected will pay over $200,000,000 to be insured in a reasonable time.

The steel frame structures as a whole stood finely, and there are a large number of buildings that will only need the brick, stone or wooden portions to be replaced. Of such are the Palace Hotel, the *Call* Building, the *Chronicle* Building, the Crocker Building, the Mills Building, the new James F. Wood Building, the Merchants' Exchange, the Murphy Building, the Shreve Building, the Union Trust Building, the Kohl Building and numerous others. The hight of the buildings did not seem to make much difference; instead, the higher buildings in many instances got off best. Besides these there are many more new buildings planned in this manner, and where there are very large and substantial structures to be erected steel will be one of the principal factors in the construction. There are two buildings that are to be altogether of steel. The United States Steel Corporation has offered to supply 150,000 tons of steel if needed and to give San Francisco the preference in shipment. There will be lots of San Francisco money spent in the East for steel before another year has closed.

The greater part of the industrial section of San Francisco has been utterly wiped out. In many places over the burned district rough temporary offices made of boards are being put up, and in a little while all the old locations will have temporary offices pending the erection of permanent buildings. The Pacific Steel & Hardware Company is located at Berry and Seventh streets, while Baker & Hamilton are also located in the same vicinity. Whitfield Baker, the head of the latter firm, has gone East to secure new supplies and has been offered $300,000 to help in the rehabilitation of the business. The Dunham, Carrigan & Hayden Company has started up again on Kansas street. There are facilities here for these different firms to load and unload along the tracks of the Southern Pacific. The Union Iron Works has now 3000 men employed, and the principal foundries at work have altogether over 4000. The O'Connell & Lewis Foundry, which was one of those wrecked, is beginning to rebuild.

A great many of the temporary structures are being built of corrugated sheet iron, for which there is a great demand. J. J. Moore & Co., one of our large foreign houses, have started in to import it. It reminds one of old times. An agitation has begun to admit lumber and steel for building purposes free of duty. There is little doubt that it would be favored by the majority that have steel structures to put up, as they consider that the Eastern manufacturers will not be able to supply promptly the wants of the market. J. O. L.

Dry Air Blast for Furnaces.

In *The Iron Age* of March 22, 1906, page 1032, a paper was reproduced, read before the Technische Verein of Pittsburgh, by A. Steinbart, describing his apparatus for the reduction of moisture in furnace blast by the use of river water. In a communication to the London *Times Engineering Supplement* Hal Williams points out that the proposal of Mr. Steinbart involves no new principles, either in compressed air or refrigeration. He adds:

"It has long been known that when air is compressed its dew point is lowered and it deposits moisture at ordinary temperatures. This principle is made use of in the dry air refrigerating machine, where the air after compression is deprived of a large proportion of its moisture by water cooling before it is admitted to the expansion cylinder of the machine. From a refrigerating point of view, Mr. Gayley's method of drying the air before compression cannot be regarded as being very scientific, but he seems to have adopted it in order to avoid having blast pressure in his cooling chambers, and of course he gets an advantage in supplying his blowing engine with cold and consequently dense air. The construction of a pressure refrigerator, however, presents no difficulties, and in many situations where water is available for a primary cooling the reduction in the size and cost of a mechanical refrigerating plant rendered possible by the decreased percentage of moisture in the air after it has passed through the primary coolers should compensate for the extra power required by the blowing engines. By a simple alteration in design it could be made quite unnecessary for men to have to enter the refrigerating chamber, and therefore this objection, which was advanced by Mr. Gayley, would be met. The air has to be compressed in any case and therefore it does not seem reasonable to go to the expense of removing by freezing a large proportion of the moisture, which can be more readily removed as water, by passing the air after compression through a primary cooler."

The projects now authorized at Niagara Falls involve a material fraction of the flow, but the actual effect will depend on conditions yet to be disclosed, according to the *Electrical World*, which says: "There is little likelihood that the cataract will be reduced to the ghastly dribble prophesied by some of the yellow journals. If, as we hope, the effect will be merely to reduce somewhat the depth of the tremendous sheet that plunges over the brink the spectacular result will be hardly diminished at all. The dynamic importance of this, the greatest cataract in an inhabited portion of the world, is so immense that it can hardly be overestimated. It can never be restored to its pristine majesty as a spectacle while the works of man crowd around its brink. The mere withdrawal of part of the prodigious volume of flow is, from the æsthetic standpoint, of far less malign significance than the garish structures that mar the sky line above the cliffs. The transmission work now in progress is a thing to be encouraged by those who honestly wish to preserve Niagara, for it places the structures of utilization miles away. Niagara could, if to-day unemployed, be industrially developed even to the half of its volume and still remain unique in splendor, for well-concealed power plants could distribute the energy over 10,000 square miles. As things now stand the cataract should fear the hotel man and the advertising fiend far more than the electrical engineer."

The *Courier*, Connellsville, Pa., publishes a description of a coke oven, patented by Pasquale Bufano and Geremia Pierboni of that town, which is claimed to have many points of superiority over the ordinary beehive oven, the special object of its construction being to produce an oven of maximum strength and durability to withstand the intense heat, as well as the strain of the gas explosions which constantly occur in the manufacture of coke. The arched wall of the oven is built of specially formed brick, so connected that as the oven stands it is virtually composed of one solid brick. The statement is made that successful tests of the oven have been conducted in the coke making districts of France.

The Reed Multiple Drilling Attachment.

The multiple drilling attachment shown in the illustrations is an extension of the principle of the three-spindle attachment manufactured by the Francis Reed Company, Worcester, Mass., which was described in *The Iron Age* February 1, 1906. Fig. 1 shows the general appearance of the complete fixture and Fig. 2 shows the two main parts separated, exposing the interior of each. The new attachment has 24 spindles, arranged in two circles, 15 in the outer and 9 in the inner. It was specially designed to drill the holes in gas stove burners and accomplishes all the necessary drilling in two operations, the full number of holes being 48. The gear case is held against the tendency to rotate, which, however, is slight, by the short arm. On the spindle and keyed to it are two internal gears, one of which engages the 15 pinions driving the spindles of the outer circle of drills, while the other engages the nine spindle pinions of the inner circle. As will be noticed from Fig. 2, the two series of gears and pinions lie in different planes. The shank of the attachment fits the socket of any standard drill or lathe, and the speed of the drills may be regulated by that of the machine.

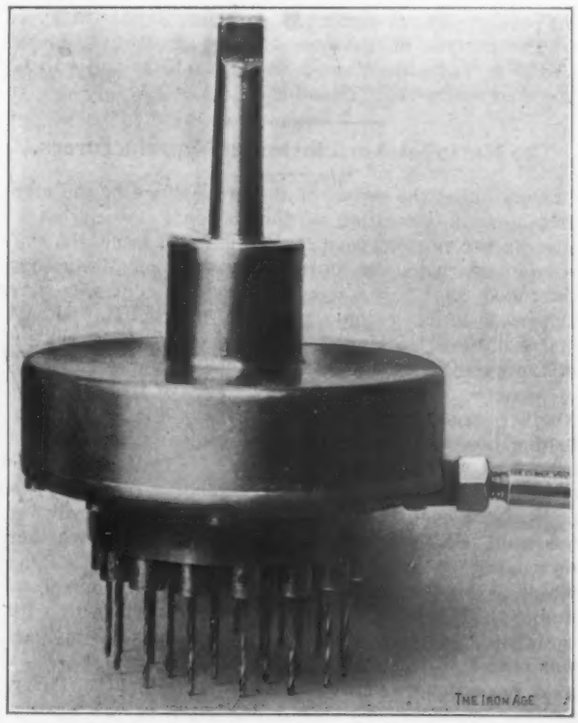


Fig. 1.—A 24-Spindle Multiple Drilling Attachment Made by the Francis Reed Company, Worcester, Mass.

The multiple drilling attachment previously illustrated and the present one are examples of the application of the principle of the device to widely divergent cases. The attachments are built only to order and are not limited to the drilling of holes disposed in circles. They may be made to fulfill almost any requirement where two or more holes are to be drilled in constant relation to one another, such as the drilling of cylinders and heads for engines, pumps, lathes and drill chucks, manufacturing or any special work where quantity is to be considered. The spindles are not adjustable, but as the cost of a single attachment is not great, two or more may be kept on hand to meet different requirements. The principal value of these attachments lies in the fact that they are immediately applicable to any drilling machine without special fixtures and that it is not necessary to reverse the direction of the machine's rotation, as the drive is such as to cause the spindles to run in the same direction as the shank.

The regular monthly meeting of the Associated Foundry Foremen of Philadelphia and vicinity was held Monday evening, May 14, and was well attended. Much interest was taken in the discussion of the question of the education of apprentices in the foundry. The subject for the June meeting is, "Ways and Means to Encourage Men to Work More Steadily and to the Best Advantage." J. B. MacMeekin of the Abram Cox Stove Company, Philadelphia, and W. O. Steele of the Bateman Mfg. Company, Grenloch, N. J., were elected delegates to attend the Associated Foundry Foremen's national convention, to be held in Cleveland in June.

The Pennsylvania Railroad's New York Passenger Station.

From announcements made from time to time it is well known that the Pennsylvania Railroad Company is planning and has begun work upon a mammoth passenger station in New York City. As all of the trains will be handled underground at a depth of some 40 feet from the street level a vast amount of excavation was required, much of which has already been accomplished. Little has been known of the details of the station proper, and it is thought that the following information, which has just been made public, will be of interest:

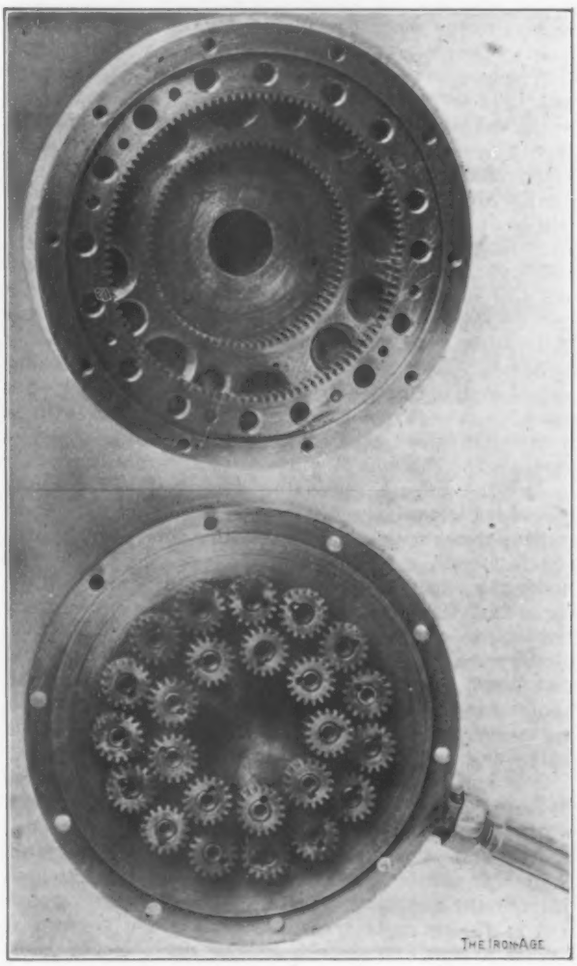


Fig. 2.—Interior Views of the Separable Members of the Multiple Drilling Attachment.

In the number and convenience of its entrances and exits the new station will be unique. Each of the four sides of the rectangular building will be a front, facing respectively on Seventh and Eighth avenues and Thirty-first and Thirty-third streets, which latter have been widened to 80 feet each, while Thirty-second street has been closed and included in the site. The frontage on the avenues is 430 feet and on the streets 780 feet. As the tracks will be below the surface of the streets the station will be divided into three levels. From the street level the walls will rise to a hight of 60 feet, except in the center, where the roof of the general waiting room will be 150 feet high, and the corner of Eighth avenue

and Thirty-third street, where the structure will be four stories to accommodate offices.

The main entrance will be in the center on Seventh avenue, opposite the intercepted end of Thirty-second street. This will be for foot passengers only, and from the street entrance to the stairway to the main waiting room there will extend an arcade 225 feet long and 45 feet wide, flanked by shops for wares appealing especially to travelers. On either side of the Seventh avenue entrance there will also be stores. At the further end of the arcade the restaurant, lunch rooms and café will be situated, with kitchens and service connections. Beyond will be the general waiting room and concourse. At the corner of Thirty-first and Thirty-third streets and Seventh avenue will be open pavilions for carriage entrances. Under cover carriages will descend from the street level by a decline about 20 feet to the level of the station proper, the Thirty-first street decline to be the entrance and the Thirty-third street incline the exit. There will be other convenient entrances for foot passengers to the general waiting room and concourse from both the streets and avenues.

The general waiting room, 320 feet long, 110 feet wide and 150 feet high, will be the largest of its kind in the world and will be the central section of the plan. Within it will be located the ticket offices, parcel rooms, telegraph and telephone offices and baggage checking windows. Adjoining the general waiting room on the west will be two subsidiary waiting rooms, 58 x 100 feet, respectively, for men and women. To the east of the general waiting room will be the main baggage room, with 450 feet of frontage for transfer wagons, covering the full area occupied by the arcade and restaurant on the plane above. Baggage will be delivered and taken away through a special subway, 30 feet wide, extending under and along the Thirty-first street and Seventh and Eighth avenue sides. From the baggage room trunks will be delivered to the tracks below by motor trucks and elevators. The cab stands will also occupy this level.

Parallel to and connecting with the main waiting room by a wide thoroughfare and west of the subsidiary waiting rooms will be the concourse, a covered place over 100 feet wide, extending the width of the station and under the adjoining streets. Two sets of stairs will descend from it to each of the train platforms on the track level. The concourse and adjacent areas will be open to the tracks, forming a courtyard 340 feet wide by 210 feet broad, roofed by a train shed of iron and glass. In addition to the entrances to the concourse from the waiting room there will also be direct approaches from Thirty-first and Thirty-third streets and Eighth avenue.

For exit purposes only there will be a subconcourse 60 feet wide, between the main concourse and the tracks, which will be 18 feet above the track level and reached by two stairways and an elevator from each platform. Stairways and inclines will lead from it to Thirty-first, Thirty-third and Thirty-fourth streets, to Eighth avenue and to future rapid transit stations under Seventh or Eighth avenue. Direct connections may also be made with the proposed subway stations on Herald Square without ascending to the street level.

The northern side of the station along Thirty-third street will be assigned to the suburban service of the Long Island Railroad, into which trains will run from all points on Long Island by way of the East River tunnels. Ample entrances and exits will be provided on Seventh and Eighth avenues and Thirty-third street, so that this traffic can be handled in connection with the adjacent subways and surface lines on the surrounding streets independently of the rest of the station.

The track level will be at a depth below the street surface corresponding to the hight of a four-story building. When the two tracks emerge from the tubes under the Hudson River and reach the entrance to the station yards at Tenth avenue they will ramify, and at Ninth avenue and extending into the station the total number will be 21. Leading out of the station to the east there will be a reduction in the number of tracks to four for the main line, two passing under Thirty-second street and two under Thirty-third street, and thence under the East River to the Long Island City yards. Within the station area, covering 25 acres of space, there will be 16 miles of track, which will afford ample facilities for moving many hundred trains per day by electric power. Through trains from the western side of the Hudson, after discharging passengers, will proceed to Long Island City, where the train yards and terminals will be located, thus leaving the station tracks clear of idle equipment, and westbound through trains made up at the Long Island City terminal will pass through the station, stopping only long enough to take on passengers. The suburban service of the Long Island Railroad will be operated on the shuttle plan, by which the trains are kept in continuous motion in and out of the station. The planning of the station, with its numerous entrances and exits independent of each other and separating the incoming from the outgoing throng, was worked out to facilitate the prompt and uninterrupted movement of the traffic.

The designs of the station were made by McKim, Meade & White, architects, New York City, and will be executed under their direction.

The National Association of Manufacturers.

Continuing the report of the proceedings of the eleventh annual convention of the National Association of Manufacturers from page 1625 of our last issue, the convention concluded its business sessions on Wednesday afternoon, May 16. A number of special addresses were delivered. Among these was one by Dr. Harvey W. Wiley of the Department of Agriculture on the subject of the manufacture of pure food, his remarks being directed more especially to manufacturers of food products. Another speaker was George H. Ellis of the Boston publishing house of George H. Ellis Company, who gave a brief history of the printers' strike. He claimed that the employers had practically won, contending that the principle of the open shop was the only possible remedy for the issue which had been brought up, as to whether proprietors should continue to manage their publishing plants or whether the employees would be the controlling influence. A resolution expressing cordial sympathy with the attitude of the publishers and a promise of support was passed.

A resolution was adopted tendering to David M. Parry, retiring president, the high appreciation of the association for the years he had devoted to its interests and the special work he personally had done for the common cause. A special committee was appointed to have the resolution engrossed and to present it to Mr. Parry on some subsequent occasion. Among other resolutions adopted by the convention were the following:

TARIFF REVISION AND RECIPROCITY.

Whereas, It is believed that in the near future the questions of tariff revision and reciprocity will be paramount issues; and

Whereas, It is of the greatest importance that if this situation develops these matters should be adjusted with such care as to cause the least disturbance to the present prosperous conditions of business; therefore be it

Resolved, That, having this object in view, the Committee of the National Association of Manufacturers on Tariff and Reciprocity be instructed and authorized to secure the views of all the members of this association on this subject and to harmonize the interests of all and be in position to express correctly and definitely the wishes of the members of this association before appearing before a Congressional committee having these subjects under consideration.

FARM MACHINERY INVESTIGATION.

Whereas, The Secretary of Agriculture has asked Congress for an appropriation of $10,000 to be used for the purpose of carrying on investigations in connection with farm machinery and its uses and application; now, therefore, be it

Resolved, That this association does hereby indorse this movement, and urges upon the present Congress the granting of the appropriation asked for.

THE MOLDERS' STRIKE.

Whereas, Some 7000 molders employed in various factories in the United States have left their work on account of the general refusal of their employers to make closed shop union agreements; and

Whereas, The National Founders' Association has steadily for more than two years advised its employees to refrain from making agreements with the unions; therefore be it

Resolved, That this National Association of Manufacturers heartily supports the stand which the National Founders' Association has taken, believing that by taking and maintaining this position the unjust demands of organized labor can be best controlled and the general welfare of both the manufacturer and employee best advanced.

Another resolution indorsed the recommendation of

the Postmaster-General, who has asked Congress to appoint a commission to consider the readjustment of second-class mail matter and other postal rates.

The officers chosen for the ensuing year are as follows: President, James W. Van Cleave, Missouri; treasurer, Francis H. Stillman, New York; vice-presidents, Ludwig Nissen, New York; Daniel C. Ripley, Pennsylvania; Geo. T. Coppins, Massachusetts; John Kirby, Jr., Ohio; Elliott Durand, Illinois; B. T. Skinner, Michigan; C. C. Hanna, Indiana; R. C. Jenkinson, New Jersey; Chas. M. Jarvis, Connecticut; Wm. F. Bixby, Missouri; Wm. T. Talmadge, Wisconsin, and H. S. Chamberlain, Tennessee. Directors at Large—David M. Parry, Indiana; Frank C. Nunemacher, Kentucky; Daniel A. Tompkins, North Carolina; Wm. McCarroll, New York; C. W. Post, Washington, D. C., and James Inglis, Michigan. Marshall Cushing, 170 Broadway, New York, the very efficient secretary, has been re-elected by the Board of Directors.

The next convention will be held in St. Louis, Mo., the home city of the new president.

The Banquet.

The convention was concluded by a banquet held at the Waldorf-Astoria. Ludwig Nissen of New York acted as toastmaster and introduced the speakers. Among those who made addresses were the newly elected president, J. W. Van Cleave of St. Louis, Mo.; Secretary of War William H. Taft, Rear Admiral J. B. Coghlan, now in charge of the Brooklyn Navy Yard; Charles E. Hughes, of New York, who conducted the recent insurance investigation, and Rev. Dr. S. Parks Cadman. Secretary Taft discussed the Philippine tariff question, claiming that the free entry of Philippine products into this country would not injure home industry and stating that we owe it not only to the Philippines but to ourselves to build in the Pacific a great island empire that cannot but redound to our commercial and historical importance. Rear Admiral Coghlan spoke on the navy and the need for a stronger merchant marine to draw from in case of war. The subject of the address of Mr. Hughes was "Corporate Management," while Dr. Cadman took as his topic "The Open Shop." The banquet was attended by nearly 400 members of the association and their guests and friends. It was considered an exceedingly enjoyable conclusion of what is regarded as one of the most successful conventions which this association has ever held.

The American Foundrymen's Association.

Programme for the Cleveland Convention.

Secretary Richard Moldenke has issued the following provisional programme for the eleventh annual convention of the American Foundrymen's Association, to be held at Cleveland, Ohio, June 5, 6 and 7, with headquarters at the Hollenden Hotel:

Tuesday, June 5, 10 a.m.—Opening Session at Central Armory.

Address by the president, Thomas D. West, on "The Need and the Benefits of a Practical Education."

Report of the secretary-treasurer.

Reports of committees and section officers.

Address by Director Stratton, Washington, D. C., on "The National Bureau of Standards and Its Work."

Address by W. K. Barrows, general manager Shenango Furnace Company, Sharpsville, Pa., on "Influences of Different Ore Mixtures on the Resultant Pig Iron from the Standpoint of the Foundryman."

Tuesday, 2 p.m., at Central Armory.

"The Beneficial Effect of Adding High Grade Ferrosilicon to Cast Iron," by Alex. E. Outerbridge, Jr., Philadelphia, Pa.

"Notes on Laboratory Investigation of Wisconsin Molding Sands," by Prof. Heinrich Ries, Cornell University, Ithaca, N. Y.

"Recent Methods of Machine Molding," by E. H. Mumford, Philadelphia, Pa.

"A Plea for Lower Blast Pressures in Cupola and Air Furnace," by Wm. H. Coleman, Chicago, Ill.

"The Electric Crane in the Foundry," by Harry Sawyer, Muskegon, Mich.

"Twenty Years' Improvement in the Quality of Pig Iron," by E. H. Williams and E. R. Sanborn, Sharpsville, Pa.

"Good Molders; Why Are They Scarce?" by W. S. McQuillan, South Norwalk, Conn.

Wednesday, June 6, 10 a.m., at Central Armory.

Address by H. A. Croxton, president of the Massillon Iron & Steel Company, Massillon, Ohio, on "A Modern Pipe Foundry."

"New Tendencies in General Foundry Management," by John Magee, Chelsea, Mass.

"Uniform Practice in Foundry Cost Finding," by Kenneth Falconer, Montreal, P. Q.

"Comparative Designs and Working of Air Furnaces," by Ralph West, Sharpsville, Pa.

"Core Binders," by A. M. Loudon, Elmira, N. Y.

Wednesday, 2 p.m.

Ladies' automobile ride. Convention session at Case School of Applied Science, preceded by visit to plants.

Address by Prof. C. H. Benjamin, Case School of Applied Science, on "Experiments on the Strength of Various Cast Iron Machine Parts."

"Electricity in the Foundry," by F. L. Antisell, Perth Amboy, N. J.

"A Talk on Alloys," by C. Vickers, Milwaukee, Wis.

"Toilet Rooms and Sanitary Appliances for the Foundry," by Henry M. Lane, Cleveland, Ohio.

Thursday, June 7.

Excursion on Lake Erie. During the boat ride a business session will be held and the following papers read:

"The Manufacture of Soil Pipe and Fittings," by T. J. Best, Montreal, P. Q.

"Development of the Thermit Process in Foundry Practice," by W. M. Carr, New York City.

"Molding Problems," by David Spence, Franklin, Mass.

"Dark Secrets in the Foundry," by Wm. H. Parry, Brooklyn, N. Y.

"Foundry Tests of Coke Made at the United States Fuel Testing Plant in St. Louis," by Richard Moldenke, Watchung, N. J.

In addition, several papers on pattern making by members of the Cleveland association, titles of which are not yet at hand.

Unfinished business.

New business.

Election of officers for the ensuing year.

Adjournment.

The following topics for discussion have been suggested, and will be taken up if time allows:

1. Have you any suggestions regarding needed improvements in appliances for tempering, riddling and conveying sand in the foundry?

2. What is the best sand for heavy, medium and light green sand castings, and where did you obtain it?

3. What brand and grade of fire brick have you found best to withstand the temperature of the cupola as well as the abrasion of the stock?

4. What proportion of your apprentices of the last 20 years have taken full advantage of every opportunity to perfect themselves in their art? What is the cause of the failure on the part of those that have not?

5. Are there radical differences required in the skill and ability to successfully manage specialty shops or those making strictly one kind of casting, as against the regular jobbing shop?

The social features of the convention so far as announced include a theatre party on Tuesday evening, an excursion to Luna Park on Wednesday evening and a smoker on Thursday evening. The secretary calls attention to the unusually elaborate provision made for a working exhibit of foundry specialties under the auspices of the foundry supply and equipment houses. The official programme issued at Cleveland at the time of the convention will cover this feature fully.

The Zug Iron & Steel Company.—This company, which has succeeded the firm of Zug & Co., Limited, operating the Sable Iron Works at Pittsburgh, will continue to manufacture the Sable brands of high grade forging iron made on universal rolls for locomotive and machine shop work, the Sable brands of staybolt iron and high grade iron bars for special railroad requirements, the Sable brands of black and galvanized steel sheets and iron sheets made from all muck bar puddled stock. Every care will be taken to maintain the reputation for quality so long borne by the old firm.

Clarkeson, Brooks & Co., 100 Broadway, New York, have been commissioned by parties whose names are being kept secret to find for them an available site, with navigation facilities, with at least 500 acres of land, for the erection of blast furnaces, rolling mills, &c. The inquiries which are being sent out to various cities by Clarkeson, Brooks & Co. state that the company for which they are securing the site is one of the largest and most important corporations in the United States, with millions of invested capital. It is stated that the company prefers a situation somewhere in the South, but will take any site that meets with its requirements.

The stockholders of the Warren Foundry & Machine Company will celebrate the fiftieth anniversary of the foundation of this company, June 7, by appropriate exercises at the works at Phillipsburg, N. J. This company is among the leading manufacturers of cast iron pipe in the country.

The Western Electric Company's Hawthorne Works.

To secure a site that would prove adequate for future additions and extensions the Western Electric Company, Chicago, three years ago purchased a tract of 110 acres in the Hawthorne district of that city at Forty-eighth avenue and Twenty-second street, and has erected upon the property one of the largest works in the West for the manufacture of electrical supplies and equipment. The location of the company's old plant on South Clinton street, in the downtown manufacturing district of the city, prevented expansion. The new shops consist of six principal groups of buildings and are divided by the Chicago Terminal and Manufacturers' Junction Railroad tracks, which pass through the property. The office, foundry, forge shops and machine shops, devoted to the manufacture of direct and alternating current motors and generators, are located on the west side of these tracks. The cable and rubber plants, for the manufacture of telephone and power cables and rubber in the various forms in which it is used in telephone service, are located on the east side of the tracks. In addition to these buildings there are a gas plant, power plant, two crematory buildings and a water tower. Connection has been made by an elevated spur track to the main line of the Chicago, Burlington & Quincy Railroad.

The Foundry and Machine Shop.

The foundry is a brick and steel structure, having a tile roof, and is 176 x 400 feet and 75 feet at its highest point. It is divided into three bays. Over the center or main bay, which is for large work, are located two 30-ton cranes. The west bay is 75 feet wide and has a low roof, it being used exclusively for bench work. The east bay, which is 30 feet wide, is divided into sections containing the cupolas, storage bins and core ovens.

The machine shop, lying at a right angle to the foundry, is 150 x 860 feet, and is of the same type of construction as the foundry, except the roof, which is of iron and tarred composition construction. There are three bays. The center bay, 76 feet wide, is devoted to the manufacture of generators and motors. The north bay, 48 feet wide, contains such machine tools as are required in the manufacture of small types of machines; in this bay is located the testing department. The south bay has two floors, the upper one being devoted to the manufacture of small field coils and the winding of small armatures, while it also contains the small detail and finishing departments. The lower floor contains the commutator and large detail departments, stockrooms and general shop offices, including that of the shipping department. The lighting is obtained from overhead skylights and side windows. Over the main bay are located two 30-ton and over the north bay six 20-ton cranes. The entire plant is equipped with a system of industrial railroads.

The Power Plant.

The boiler room has an area of 20,700 square feet and is designed for two chimneys, each 12 feet inside and 22 feet outside diameter and 250 feet high. Provision has been made for two batteries of boilers of eight each, a chimney dividing each battery into two sets of four. At present there have been installed eight boilers of Aultman & Taylor Company's make operating at 150 pounds. Contracts have been made for increasing the boiler capacity 25 per cent. The present boilers are so arranged that superheaters may be installed at a later date should it be thought advisable. Aultman & Taylor Company's chain grate stokers are used. Each set of four boilers is provided with a Greene fuel economizer of 66 sections, 12 tubes wide. The water tubes of the boilers are cleaned by means of a hydraulically driven cleaner.

A Cochrane open feed water heater of 8000 horsepower capacity and two 14 x 10 x 15 inch Worthington duplex vertical type boiler feed pumps are located in the boiler room.

The engine room and condenser pit have a total floor space of nearly 16,000 square feet and contain a power plant of a capacity for continuous service of 3000 kw. and for two-hour service of 4500 kw. There are four units, one each of 300, 500, 1000 and 1200 kw. capacities. The larger generator is driven by a vertical cross compound Rice & Sargent engine made by the Providence Engine Works. The diameters of the cylinders are 32 inches and 62 inches, and the stroke 48 inches. The 300 and 500 kw. generators are driven by a horizontal cross-compound engine, and the 1000 kw. by a vertical cross-compound made by the Filer & Stowell Company. The cylinder diameters are as follows: 300 kw., 16 x 32 inches; 500 kw., 20 x 40 inches; 1000 kw., 30 x 60 inches.

Compressed air is used for the purposes of pneumatic tools, blowing out cables and electric machinery and operating molding machines. The entire plant is supplied with air at 90 pounds pressure by a 20 x 12 x 18 inch Laidlow-Dunn-Gordon two-stage air compressor direct driven by a 12 x 19 x 18 inch compound engine fitted with a Myer release gear and located in the condenser pit.

The Coal Supply.

The main railroad tracks dividing the company's property afford an easy means of handling the coal, as they are of such a hight that cars may be switched by means of an elevated spur track into the storage bins located above the boiler room. These bins are of 1000 tons capacity and are so designed that the coal may be discharged through spouts into a hopper scale for each division of boilers. This scale is mounted on a track, so as to take the coal from any part of the bin and deliver it to any one of the stokers. The ash is discharged at the end of a chain grate stoker into a bin of 1½ tons capacity located below each boiler. From these bins the ash may be delivered into cars and taken by means of a depressed railroad track to various places about the plant where filling may be required.

The continued uncertainly of the coal supply, due to strikes and other conditions beyond the control of the manufacturer, has led to a careful consideration of the problem of coal storage. The Western Electric Company, after carefully investigating the question, decided to follow the practice adopted by the British Admiralty. Two storage bins, one of 4000 and the other of 10,000 tons capacity, both located below the normal ground level, have been constructed into which coal may be dumped from cars and taken out by means of a locomotive crane fitted with a grab bucket. Carefully executed tests in Europe show that nearly 30 per cent. of the heating value of coal is lost in six weeks when stored exposed to the air. By keeping the bins flooded with water the company expects to reduce the losses of the coal to approximately 2 per cent. of its heating value after six months to a year storage. By this system of storage there is provided sufficient coal to operate the plant under normal winter conditions for four months.

Method of Driving Machines.

All the machinery in the plant is electrically driven, an individual drive system being employed, except in a few cases. The main machine shop and cable plant contain many variable speed motors, which are operated from a three-wire system. A compensator, or voltage balancer, located in each of these buildings, is of sufficient capacity to carry the unbalanced load resulting from the variable speed motor load.

The engineering firm of W. S. Barstow & Co. has been incorporated, with offices at 56 Pine street, New York, and Failing Building, Portland, Ore. Mr. Barstow has secured the co-operation in the new company of J. B. Taylor, late with Westinghouse, Church, Kerr & Co., and R. L. Donald, late with the Southern Pacific Railroad. The firm has already booked orders for seven important electrical installations running into millions of dollars. Mr. Barstow was at one time manager of the Edison electric system in Brooklyn and is president of the New York Electrical Society.

The Waltz Safe & Lock Company, San Francisco, Cal., which was burned out at 109 Market street, reports a remarkably good showing for its safes in comparison with the best Eastern makes. The company has opened headquarters at Fifth and Chestnut streets, Oakland. It is the intention to erect a first-class plant, and engage extensively in the manufacture of safes again.

Troubles with East River Tunnels.

BY S. D. V. BURR.

Trouble is being experienced in constructing the tunnels under the East River. At present work is progressing on two sets of tubes. The first set forms part of the Pennsylvania improvement and extends from Thirty-fourth street, New York, to Long Island City; the second constitutes the extension of the Rapid Transit system, and leads from the Battery, New York, to Brooklyn. In all the most essential features the two sets of tubes are identical, and the methods of building are also similar. All of the six tubes—two for the Rapid Transit and four for the Pennsylvania—are circular in cross section and lined with flanged cast iron plates. Both employ the shield for advancing the heading. In former issues of *The Iron Age* the routes and principal engineering characteristics of the two schemes have been thoroughly described.

During the last few days trouble has developed in both undertakings. In the Pennsylvania tunnels blowouts through the tunnel roof have occurred in two of the tubes, and the engineers are now engaged in the endeavor to stop the leaks. Accidents of this kind are expected in subaqueous tunneling, and the most careful supervision has been unable hitherto to avoid them. In almost every instance the difficulty has been caused by the shield entering material of an unknown and unexpected consistency. This was frequently the case in the Hudson River tunnels, where the heading would suddenly leave the compact and tenacious silt and enter quicksand, the result being a blowout of large or small dimensions.

A blowout varies in extent from a pin hole to a geyser, and the damage is in direct proportion to the area of river bed disturbed. In a blowout of some magnitude the outpouring air may loosen the bed over a comparatively large space. This is what took place in the Pennsylvania tunnels. The bed of the river at that point is composed of more or less disintegrated rock, in which there are large and small pockets filled with loose material—mud, sand and gravel. Trouble is almost sure to arise when the heading suddenly encounters one of these soft places. The loosened material resembles an inverted cone in shape, and is generally accompanied by a depression in the bed. Before work can be resumed it is necessary to fill this depression, and this is the task now before the engineers.

Filling a hole of this kind under the East River is a much harder job than the same thing was in the Hudson River tunnels. In that case a few days of no work and the flooding of the tunnel would be all that was necessary in order to resume operations. The silt would gradually settle and fill the depression and become so compacted that the heading could be driven as if no break had occurred. Of course this plan was only feasible when the blowout was of small size. Filling the depression from the river surface was resorted to when the leak had been so large that much material had flowed into the tunnel. This work was easy with the slow moving currents of the Hudson. In one of the largest breaks that happened in the old tunnel the hole was filled with bales of hay weighted with rock, and silt was dumped in to fill irregularities. After this had settled a short time work was begun and the heading carried beyond the break without undue trouble.

Such a method would be obviously impossible with the rapid currents of the East River. The engineers are therefore filling the hole with cement and clay confined in bags. When this has settled work will be resumed in the usual way, the shield being provided with the ordinary compartments, to permit its use in soft material.

The difficulty with the Battery tunnels is of an entirely different character and one much harder and more expensive to correct. What may be taken as the river portion of this work extends from Battery Park to Joralemon street, near Henry, Brooklyn. These tubes are lined with flanged cast iron plates, bolted together, and are of circular section. They are therefore subject to the same laws of loading as arches of the same type. Unequal pressure or loads not uniformly distributed are apt to produce distortion of the arc, and this is what has taken place at the Brooklyn end of the tubes. The strength of an arch of this kind depends upon the maintenance of a constant and even load over the whole of the exterior. A change in this uniformity is almost sure to be followed by deformation, since the structure is not designed or intended to resist such strains. The distortion has been principally a flattening of the crown at places where the loading has been uneven and concentrated at that point. The clearance allowed by the plans was 5 inches, and in some locations the movement has been so great that the top would scrape cars of the subway pattern and size.

Another aspect that has been dwelt upon to considerable extent is the fact that it is next to impossible to maintain grade in tunneling with a shield through material varying in density and composition. This is the character of the ground through which the tubes are now being driven. The nose of the shield is liable to drop when passing from a dense to a lighter material, and it is impossible to wholly correct this by any method of jacking. This, working in harmony with an uneven load, has probably caused the distortion.

While considerable attention is attracted to the subject it is well to note that neither the Rapid Transit people nor the contracting engineers are worried. Already the trouble has been corrected in some places by lowering the invert a sufficient amount to provide the clearance desired. It is probable that most of the work of correction will be reserved until the tubes have met, since it will be easier and cheaper to do it then than now. The plates not in line will then be removed, the earth excavated and the plates replaced in proper position. While this will be necessarily a slow and expensive undertaking, it presents no uncommon difficulties; it will be done either at the crown or the invert, as may best meet the requirements of grade. Similar work has been done before; in fact, in the old Hudson tunnel it was once proposed to rebuild about 200 feet of the crown in order to do away with an excessive grade, but this was rendered unnecessary by the use of smaller cars and the adoption of electricity.

On one of the Battery tubes there remains about 950 feet between the headings, and on the other about 1000 feet. It is expected that this work will be finished by December 1 next and that trains will be in operation six months later. The defects noted will not interfere with this plan. The city has been amply protected in the matter, as over $200,000 has been withheld from payments due the contractor.

Republic Iron & Steel Company Changes.

A special meeting of the directors of the Republic Iron & Steel Company was held at the office of the board at 111 Broadway, New York, Tuesday, May 22. The resignation of Vice-Presidents A. H. Huston, G. Watson French, John F. Taylor and W. H. Hassinger were presented and accepted, those of the two last named to be effective on July 1. Mr. Taylor, who finds a need of rest after a long period of active service, resigned also as treasurer, the change being effective July 1. H. L. Rownd, the secretary of the company, will also assume the duties of treasurer, being elected to succeed Mr. Taylor. Mr. Hassinger, who retires to attend to his own business interests, will be succeeded as general manager of the Southern properties of the company by Frank H. Crockard, who has just been elected vice-president and general manager of the Tennessee Coal, Iron & Railroad Company. In connection with the recent adjustments of selling arrangements for the Tennessee and Republic companies F. A. Burr, general manager of sales for the former, becomes assistant general manager of sales for the Republic Iron & Steel Company, having charge of its pig iron sales, both North and South. S. V. Ker, general manager of sales of the Republic Iron & Steel Company, in addition to having charge of all its sales of finished products as heretofore, will handle the sales of all finished products of the Tennessee company, both North and South, except as to rails.

THE IRON AGE

1855—1906

New York, Thursday, May 24, 1906.

DAVID WILLIAMS COMPANY, ... PUBLISHER
CHARLES KIRCHHOFF, ... } EDITORS
GEO. W. COPE, ... }
A. I. FINDLEY, ... }
RICHARD R. WILLIAMS, ... HARDWARE EDITOR

Some Factors in the Iron Trade Outlook.

The iron trade has reached that point in the year when it pays far more attention to what is going on without than within it. The wheat crop yield and corn crop prospects are the pivots on which the situation will turn in the next two months. It will be recalled that at this time last year there was a more than usually sharp scrutiny of trade indications on the part of iron and steel manufacturers, the chief concern then being whether the iron trade, after the forward movement of the latter part of 1904 and the hesitancy and in some lines receding prices that followed it would be able to broaden the original movement and carry it on into the full swing of prosperity. The outcome was all that the most optimistic prophets predicted. To-day the prime question is whether the comparative quiet that has been more or less in evidence in parts of the market for some weeks is to be succeeded by another period of marked activity.

There is this difference between the situation to-day and that of a year ago. Then good crops were looked to to bring on prosperity. Now it is conceded that good crops are necessary to prevent a relapse from prosperity. To an extent to-day's market is on the defensive and calls for explanations, whereas in the late months of 1905 every week's market told its own story unmistakably.

A fortunate feature of the year's record thus far is the checks that the speculative spirit has met, first in the surprising advance in money rates a few weeks ago, and later in the calamity at San Francisco. Nearly every discussion of the business outlook at the beginning of 1906 pointed out that reckless speculation was likely to make the year's end less favorable than its beginning. The general proclamation of the danger was the best safeguard against it, and the present apathy of the public toward stock speculation is one of the saving features of the situation.

That the iron trade has been temperately conducted in the months of its record activity will not be disputed. Prices have not been carried up inordinately in any line. Indeed the temporary disturbing factor in one department of the trade is the fact that a large consuming interest was given the advantage of a slight concession, made to bring an important tonnage on the books and thus bridge a period of some uncertainty. Whatever the remainder of the year may bring forth, the charge will not lie against the leading factors in the iron trade that they imperiled the prosperity they enjoyed, by either helping or permitting the market to soar. All this record of discretion will not counteract outside influences, yet if these be unfavorable their effects will be lessened by the wise restraint that has been exercised.

At the moment the policy of the railroads is of vast importance. The iron trade feels the buoying effect of the large requisitions already made for rails for delivery in 1907, and there are assurances of employment for the steel car works in the early months of next year. But the other side of the picture is the financial problem of these heavy prospective expenditures. It is well assured that the accruing wealth of the railroads will not take care of their lavish improvement programmes, and while just now foreign capital is flowing into the United States in a liberal stream, it is a question how long European resources will be available on the present scale under the uncertainties surrounding the financial situation abroad and the keen international competition for gold. One good feature in this connection is that these obscurities which home and foreign financiers are now striving to penetrate, but with only partial success, are bound to hold a good check on Wall Street speculation. Thus crops and politics are likely to divide the concern of the iron trade in the months just ahead. Concerning the former, the main indications up to this time are quite favorable, though the season of scares is at hand. As to politics, there is a disposition not to cry until the hurt comes, but the business community could well wish for at least a year's postponement of the sort of Congressional campaign that seems to be in store for the coming fall.

Lake Labor Troubles and the Ore Movement.

The recent strike of the longshoremen's union at lake ports has emphasized again the possibilities of interruption to the ore supply of blast furnaces depending upon Lake Superior mines. While there had been no marked scarcity of ore in any quarter and a portion of the April shipments of 1,447,386 tons from upper lake ports in April had been unloaded before the strike, which began on May 1, the chance of complications that might prolong the period of idleness was enough to cause some concern in the pig iron trade. So many unions have been built up in the lake trade that the possibilities of trouble have been increased in recent years, though the rapid introduction of improved unloading machinery has been a powerful brake upon a situation that for some years had been growing more and more unbearable. The climax was reached in 1904, when the ambition of the unions to control the lake trade overreached itself in the demand that vessel owners should have as personal representatives on their boats in the capacity of masters none but members of the union. When it is stated that the masters' union was affiliated with other unions controlling all the men under the masters' command, it can be understood why the lake carriers decided that, if the federated unions were to have entire charge of their property when away from port, the time had come to give up the business.

In the light of developments in the longshoremen's strike it would seem that the very thoroughness of union organization on the lakes was the owners' salvation. So many union heads caused conflicts of authority and these bickerings defeated the drastic policy the labor leaders set out to enforce. Yet the lesson of the strikes of 1904 and 1906 has not been lost on the ore shippers. It may be expected that the policy of the United States Steel Corporation in 1902 will find imitators. In that year an extra factor of safety was allowed and the corporation brought down 25 per cent. more ore than it was likely to use in 12 months. If there is a continuance of pig iron production at the present rate through the next six months it may be expected, in view of this other phase of the situation, that the maximum estimate heretofore made for the 1906 ore movement will be reached.

In this connection undue weight may be given by vessel interests unattached to the iron trade to the figures showing the amount of ore on Lake Erie docks on May 1, 1906. This has been reported at 1,791,090 tons, or less

than for any year since 1900. It should be noted that since the furnace companies began providing storage yards at the furnaces into which ore is taken directly from the vessels the amount of ore on Lake Erie docks has had less and less significance. As from 80 to 90 per cent. of the ore brought down never goes on dock the total that may be there either at the opening or close of a navigation season is but a fraction of what was originally a fraction of the whole. It requires an inventory of the stocks of ore in furnace yards to reveal the true situation. Thus, on May 1, 1904, it was found by a canvass of the situation that 4,500,000 tons of ore were on Lake Erie docks and 6,500,000 tons were in furnace yards. In no other recent year have the furnace yard stocks been ascertained. This year the presumption is, in view of the unprecedented rate of ore consumption in the past winter and such information as is available regarding the condition of particular furnace ore piles, that the stocks at furnace on May 1 were considerably less than the total ascertained in 1904. It is quite certain therefore that shipping and ore handling facilities in the mining regions at upper lake docks at Lake Erie and on all the roads leading from lower lake docks will be taxed to their utmost capacity.

Looking for Tariff Revision.

The National Association of Manufacturers is evidently convinced that the revision of the tariff is one of the possibilities of the near future. This is indicated by the fact that the association has charged one of its committees with the task of endeavoring to harmonize the wishes of the members of the association regarding changes to be made in the tariff. This is certainly a great undertaking. If the committee simply contents itself with an expression of opinion regarding the character of the revision, and does not go so far as to recommend schedules of rates, it may be possible to reconcile the conflicting views which obtain among a body of men whose interests are in many cases diverse. If, on the other hand, the committee should proceed on practical instead of abstract lines, and endeavor to formulate schedules of rates, it is not difficult to foresee what the inevitable outcome would be. However manufacturers may agree on abstract questions of tariff policies, it is always an exceedingly difficult matter to get them to agree regarding the rates of duty which should be imposed on their products. If all manufacturers controlled their supplies of raw materials from primary sources they would then be on a comparatively uniform footing, and the question of acceptable tariff duties might resolve itself into geographical considerations. This, however, is by no means the case. Manufacturers in one line are very frequently producers of commodities which serve as the raw materials of other manufacturers, and this condition of affairs naturally brings about a feeling of antagonism in endeavoring to fix tariff rates.

It is not to be expected that the committee will recommend radical changes in the present tariff. The tendency among manufacturers of late years has been toward the maintenance of stiff duties, which is completely at variance with expectations in a brief period ending in 1901. The sentiment of manufacturers present at the Detroit convention in that year seemed to culminate in favor of lower duties and reciprocity treaties with other nations. The tendency at that time was running strongly in favor of cultivating foreign trade, and the natural outcome seemed to be the cultivation of closer commercial relations with the world at large, but the commercial treaties then pending failed to receive the approval of the Senate, and since then in spite of prophecy our foreign trade has heavily increased, not only in natural products, but in manufactured articles. This has to a great extent allayed the apprehensions of those who feared the effect of hostile tariffs on our foreign trade. The only serious development in this direction recently has been the new German tariff. This is the one development which has again turned the views of many manufacturers in the direction of reciprocity treaties. The advocates of tariff revision are numerous, and their influence is becoming stronger, and it will be interesting to see what the outcome will be when the committee above referred to makes it report.

Expansion in the Drop Forging Industry.

The number of concerns which have entered the drop forging industry during the past year, or which are preparing to enter it, is so great as to be a matter of much comment among those who are interested in the business. It is estimated that 50 new drop forge shops have been or are about to be established, increasing the country's capacity for this class of forgings to a tremendous extent. The number given is more or less of a guess and may be somewhat exaggerated, but it is sufficiently accurate to form a basis for conjecture as to the effect of the new companies on the general business of this class of manufacture. In the same connection it should be borne in mind that some of the larger users of drop forgings have been impelled to establish forge shops of their own because of their inability to supply their wants from those who make a specialty of the product. The effect upon the business of those who sell forge shop equipment has been very marked. They are sharing the general prosperity with the builders of machine tools and other metal working appliances and machinery.

The question is asked what the result will be when times get dull again. The same question may be asked of most lines of manufacture, for the total capacity in every line has been greatly increased during the past year, and the end of enlargements is by no means here as the story is told on the books of those who supply the equipment. Drop forgings are coming into greater use all the time. The demands of modern methods of manufacture require stronger machinery, and drop forgings, together with steel castings, are sought to give their greater strength, as compared with materials previously employed for the same general purposes. The automobile alone keeps hundreds of hammers busy. The cost of forgings has been lowered, which in itself has vastly increased the scope of their uses in hardware and many other lines. That other men were attracted to enter the field is not to be wondered at, for it was well known that existing works could hardly supply the demand which prevails during such times as these. Possibly too many have gone into the business. Such is usually the case during periods of extraordinary business activity, and later on this trade may furnish another instance of the survival of the fittest. Yet the relative demand will be much greater during the next period of industrial depression, whenever that time shall arrive. The business will develop along new lines. Under the impulse of disposing of the product of the forge shop the newcomers in the industry will surely follow the lead of the older manufacturers in developing manufactured products, entering the hardware and kindred fields. It has always been the experience of industry that in times of great demand for manufactured product the capacity of every line is increased apparently abnormally. But, on the other hand, the country grows rapidly during such a

period, and when business slackens the demand remains greater than it was previous to the beginning of the good times. If business keeps up with its present promise the greater capacity of the country's drop forge shops will be much appreciated by consumers.

Stronger Foreign Markets.

The international iron and steel markets are undoubtedly working into a stronger position. Our German correspondent advises us that the syndicates in that country are now relaxing their efforts to secure foreign trade. They are not only advancing prices on certain classes of steel products, but are at the same time withdrawing the bounties which have heretofore been given on sales made for export. It is stated that this action is not wholly due to the increased home consumption, but also to the fact that export business can be secured without the assistance given by these bounties. Our readers should of course understand that the bounties referred to are not in any way Government bounties, but are given by associations of producers in various lines of iron and steel manufacture as well as by associations of coal operators. The strengthening of the world's markets is an auspicious movement for our own iron and steel interests. The iron trade of the United States cannot be substantially and continuously prosperous unless the iron trade of the world is also active at remunerative prices.

The Amalgamated Association Scales.

The thirty-first annual convention of the Amalgamated Association of Iron, Steel and Tin Workers, which opened in Cincinnati May 1, closed last week, after being in session for an unusually long time. The wage scales for the puddling and finishing, sheet and tin mills were adopted without material changes. The only demand that will likely be opposed by the manufacturers is that which provides for an advance of 25 cents a ton in the boiling scale.

The memorandum of agreement remains unchanged, except the second clause, which was changed to read: "On all mills working iron or steel weighing 130 pounds, or over, extra help shall be furnished to the heater; and for each additional 100 pounds additional help shall be furnished, the same to be paid by the company. Extra help shall also assist run-down to charge."

In the present boiling scale the basis is $5 a ton when bar iron sells at 1 cent a pound, and provides for an increase of 25 cents a ton with each 1-10 cent advance after the price reaches 1.3 cents a pound. Under the scale adopted the advance will be effective at 1.2 cents a pound, as follows:

Cents		Cents.	
1	$5.00	1 6-10	$6.25
1 1-10	5.00	1 7-10	6.50
1 2-10	5.25	1 8-10	6.75
1 3-10	5.50	1 9-10	7.00
1 4-10	5.75	2	7.25
1 5-10	6.00		

The old foot notes were reaffirmed and the following new ones were adopted:

No. 33.—When a heat of swarth, or a heat of half swarth and half turnings, cannot be rolled in the furnace by reason of brass or other metals in the heat, and it becomes necessary to pull the heat out, 60 per cent. of the charge shall be paid for.

No. 34.—That the company put water shields on all furnaces in puddle mills.

No. 35.—That the company shall furnish tap buggies for the puddler.

No. 36.—That all standing turn men get their money from the office of the company.

Present scales for piles on boards, busheling on sand bottom, knobbling, heating slabs and shingling, bar and 12-inch, plate and tank mills were reaffirmed. Foot note No. 12 in the 12-inch mill scale was changed to read: "The company shall pay fireman on coal heating furnaces, stockers included, except where the production of solid body of steel is 50 per cent. or more in any pay period; then the company shall pay one-half, except where the practice requires the full payment."

A new foot note, No. 16, was added to this scale, as follows: "That catcher's helper receive not less than one-third of catcher's wages. This not to be used to reduce helpers receiving higher wages."

It was recommended that no change be made in the base prices of the guide, 10-inch, hoop and cotton tie mills scale, except that a new column for stranders be placed in the base schedule of prices, to be taken from the rollers' column, thus doing away with foot note No. 21.

The following was added to the base prices under the hoop and cotton tie schedule: "2¼ and 2½ channel rub-iron and 2½ wagon-rub, 2.42 total."

The following new foot note, to be known as No. 3 of the hoop and cotton tie mills, was adopted: "On all sizes of pole caps 13 gauge and lighter, 10 per cent. above band iron prices shall be paid."

In the scale for guide mills, &c., a new foot note, No. 22, was added as follows: "In mills where one crew works on two separate mills, the crew will not be required to change rolls on one mill while working on the other."

The preamble and base in both the sheet and tin plate scales were reaffirmed, but a few minor changes were made in the foot notes. New foot notes were inserted in the plate mill scale as follows:

1. For No. 13 gauge, and all lighter gauges, straight jobbing mill prices shall be paid.

2. All iron and steel rolled on plate mills, sheared to patterns of irregular shapes or circles, shall be paid for at the weight of the square sheet. This clause shall not apply to boiler and tank heads, or any plates or sheets where the waste does not exceed 10 per cent. above square sheets, but where the waste does exceed 10 per cent. above square sheets the company agrees to pay 20 per cent. extra above scale prices.

3. The foot note that applies to roller's scale shall apply to the hands' scale also.

4. On all plate mills where coal is used the company shall pay for firing the pair or slabbing furnace.

Two new notes were added to the jobbing mill scale as follows:

1. On all jobbing mills where coal is used the company shall pay for firing pair or slabbing furnace.

2. The rougher, pair heater and matchers shall be paid 10 per cent. above scale prices on jobbing mills where slabs must be dragged to the rolls and no telegraph is used.

The foot notes in the tin plate scale were all readopted except No. 22, which was changed to read: "When working packs over 80 inches long and weighing more than 60 pounds, help shall be furnished catcher."

A new foot note, No. 24, was added to read: "The screw boys shall not handle scrap."

Scale for Eastern Bar Iron Mills.

The committee to which was referred the matter of preparing a scale for the Eastern bar iron mills reported as follows:

Inasmuch as the differential on the price of boiling has widened to $2 per ton between the East and West, or an increase of $1.10 since the last annual convention, held at Detroit, Mich.; and

Whereas, A number of lodges in the Tenth or Eastern District requested their employers, on June 15, 1905, to accept and sign the scale of wages adopted at the Detroit Convention, to take effect July 1, 1905, but were refused; and

Whereas, On January 1, 1906, a majority of the lodges in the Tenth District requested their employers to grant an increase of 12½ per cent. on all wages, to take effect January 15, 1906, but were all refused; and

Whereas, The success of the organization in the Eastern division depends largely upon the action of this convention as to the adoption of some measures to better the condition in said district; therefore, be it

Resolved, That on and after July 1, 1906, the differential on the price of boiling shall not exceed $1.25 per ton between the East and West;

Resolved, That each lodge in the Tenth District be duly notified to apprise their employers of said action and deliberations;

Resolved, That in event that the manufacturers refuse to grant said concessions, all lodges in the Eastern division shall refuse to work until manufacturers agree to grant concessions, unless something unforeseen should occur between the lapse of present date and July 1, 1906, that it would be deemed injurious to the organization to take such step; in the which event it shall be left in the hands of the proper authority to act.

The Status of the Iron Molders' Strikes.

An Agreement at Cleveland.

Cleveland has been eliminated from the list of cities at which disagreements exist, the molders and foundrymen having come together in the past week on a basis of $3 a day of nine hours for molders and $2.75 a day of nine hours for coremakers. Molders working less than nine hours will receive 33 1-3 cents per hour and coremakers working less than nine hours will receive 30 5-9 cents per hour. A proviso has been added to the Cleveland agreement covering limitation of output and the operation of molding machines in the following terms:

That the arbitrary limitation of the daily output on the part of the employees, or arbitrary demands for an increase in the output of the employees on the part of the foundrymen, not being in accord with the spirit of equity which should govern the relationship of employer and employee, all attempts in that direction are to be viewed with disfavor.

That the right of the foundryman to introduce or operate molding machines in his foundry shall not be questioned. In determining who shall operate them regard should be given to the question of how their best possibilities can be brought out, and how the work can be most economically produced.

Cleveland was the scene of the memorable strike of 1900-1901 in which the National Founders' Association supported the machinery founders, the strike ending in mutual concessions. Neither the founders nor the molders were disposed to repeat that history and therefore both sides made efforts to reach an agreement in the present instance.

Milwaukee and Beloit.

An increase in the minimum from $3 to $3.25, a reduction in hours from ten to nine and a closed shop agreement were demanded at Milwaukee. The coremakers also asked for recognition, which they have not had in a number of years. Sixteen shops are involved, employing about 1000 men. The founders are strongly opposed to compelling all their coremakers to go into the union. The union molders are offering to support all independent malleable and light gray iron molders who go out on a sympathy strike. A good many of the latter two classes, however, are applying for their old positions. The offer of the Milwaukee employers was the old wage of $3 for floor molders and $2.80 for bench molders and a nine-hour day instead of ten hours as heretofore.

At Beloit the closed shop, nine hours and an advance in the minimum from $3 to $3.25 were asked and about 125 molders went out on May 3. The largest foundry in the city is taking off a daily heat, some of its employees having remained at work. An open shop will be maintained. Another foundry is arranging to start up.

Missouri and Kansas Points.

The union of Kansas City demanded a minimum of $3 a day and a reduction of hours from 10 to 9, with a signed agreement. The coremakers asked for an increase from $2.75 to $3. At Topeka, Kan., 20 men in five shops went on a strike, from $2.75 to $3 for molders and from $2.25 to $2.75 for coremakers. A reduction of hours to 9 and a closed shop agreement were also demanded. Similar demands were made at Pittsburgh, Iola, Parsons and Atchison, Kan. The foundrymen at these points and at Springfield and elsewhere in southwestern Missouri have united in resisting the demands, particularly in relation to the closed shop. At Joplin, Mo., the molders and coremakers have gone back under an arrangement with the foundrymen, but no agreement was signed. The strike at Pittsburgh and Iola began on May 2, and at Topeka on May 14. Between 300 and 400 molders and coremakers are on strike in Missouri and Kansas points named above. Foundries in Springfield, Mo., have begun to run with nonunion men.

Twenty-four Buffalo Foundries Involved.

Strikes are on in 24 Buffalo foundries employing nearly 1000 molders. The molders asked for $3 a day instead of $2.80, a 9-hour day instead of 10 hours and a closed shop agreement. Two foundries were being operated with nonunion molders at the close of last week, and other shops are preparing to reopen.

The old rate at Minneapolis and St. Paul was $2.88 for molders for a 9-hour day. The demand was for $3.15, and the coremakers asked for $2.75. A written agreement with the union was also stipulated. About 350 men are on strike. The foundrymen are preparing to operate their plants on the open shop basis.

The Boston strike started April 23 and followed a demand for an advance of 25 cents on the existing minimum of $2.75, also for a 9-hour day. Upward of 450 men are out. The molders of the B. F. Sturtevant Company, however, have returned to work on their former nonunion basis on mutually satisfactory terms.

About 300 men are out at New Orleans. The strike started with a demand in one shop for an increase in the minimum to $3.50 for a 9-hour day, with signed agreement. A local association has been organized by the foundrymen and 9 shops are included, the demand having started from the single shop in which it was first made.

Nashua, N. H., foundries have been paying on a graduated scale for 60 hours' work. They were asked by the union for a $2.75 minimum, a nine-hour day and a signed agreement. About 125 men are out, but all the foundries are operating in part.

Seventy-five men are out at Salt Lake City, asking a minimum of $4 for a nine-hour day—an advance of 50 cents.

Six foundries at Toledo, Ohio, are organizing a local association and will not treat with the union. The demand made by 150 molders and coremakers is for a $3 minimum for the former and $2.75 for the latter.

The issues at Grand Rapids, Mich., are an advance from $2.75 to $3 in the minimum rate, a reduction of hours to nine and the closed shop. Seven shops, employing 111 union men, are involved. The foundrymen are working together.

Scranton, Pa., molders asked for a nine-hour day with the wages now paid for ten hours, $2.75 and upward. A written agreement was also asked. About 160 men are involved. Hazleton, Pa., has the same issues. Fifty men went out there.

The molders and coremakers at Troy, Cohoes and Waterford, N. Y., are on strike in sympathy with the union of foundry laborers, which has demanded recognition.

Molders and coremakers at Detroit have presented demands which have not been granted, but at last reports a strike had not been formally ordered. The molders ask a flat minimum of $3 for floor and bench work, a nine-hour day and the closed shop. The coremakers asked recognition and a $2 minimum.

San Francisco Addresses.

Below are given the temporary addresses of quite a number of firms in the iron and steel trade taken from recent communications to this office, all in San Francisco except when otherwise given:

K. C. Schmidt Company, Enterprise Foundry, Main and Folsom streets.
United Railroads of San Francisco, Oak and Broderick streets.
Abner Doble Company, 2611 Broadway.
Miller & Lux, Incorporated, 862 Howard street.
Dyer Bros., Incorporated, Golden West Iron Works, Seventeenth and Kansas streets.
John Finn Metal Works, Second and Harrison streets.
W. T. Garratt & Co., 138 Fremont street.
Meese & Gottfried Company, Nineteenth and Harrison streets.
Woodin & Little, 701 Scott street.
McMullin & Eyre, 298 Steuart street.
Gilhuly & Ambler, Atlas Building, 604 Mission street.
Occidental Machinery & Engineering Company, 2303 Pacific avenue.
Woods & Huddart, 2123 Pierce street.
Colorado Fuel & Iron Company, Bacon Building, Twelfth and Washington streets, Oakland, Cal.
John A. Roebling's Sons Company, 1116 Broadway, Oakland, Cal.
Milliken Bros., Incorporated, First National Bank Building, Berkeley, Cal.
John T. Rowntree, 505 Delta Building, Los Angeles, Cal.
Henry Lund & Co., Tribune Building, Eighth and Franklin streets, Oakland, Cal.
Rhode Island Perkins Horse Shoe Company, R. S. Alexander & Son, 415 Mission street, San Rafael, Cal.

Germany has 8737 miles of waterways available for traffic, 5776 miles of which represent rivers and 1451 miles canalized rivers.

Loss of Air in Blowing Iron Furnaces.

BY OTTO JASCHKE, CHICAGO, ILL.

It is important for the blast furnaceman to know exactly the amount of air blown into the furnace. Between the blowing engines and the furnaces there is always a loss of air blast. This is partly in the blowing engines themselves, due to leakage from the air cylinders, and partly in the cold blast main and in the stoves, due to leakage of the different valves. These losses are generally estimated at from 20 per cent. to 40 per cent. The actual loss of air blown can only be found by figuring out the amount of air theoretically furnished by the engine and comparing it with the actual amount entering the stack.

We find theoretically the amount of air blast in a very simple way: Figure out the cubic contents of one air cylinder, multiply this by 2, because every revolution consists of two strokes, and then multiply by the number of revolutions in one minute. This product multiplied by the number of air cylinders working for one furnace gives the theoretical amount of air blown into the furnace per minute. The formula becomes:

$$\frac{\pi r^2 \times \text{stroke}}{1728} \times 2 \times \text{number revolutions} \times \text{number air cylinders} = \text{number cubic feet of air per minute.}$$

Taking the radius of the cylinder to be 42 inches, the stroke 60 inches, the revolutions per minute to be 37 and the number of air cylinders 3, we have:

$$\frac{42^2 \times 3.1416 \times 60}{1728} \times 2 \times 37 \times 3 = 42{,}718 \text{ cubic feet of air per minute.}$$

Thus the amount of air blown into the furnace per minute is theoretically 42,718 cubic feet.

Computing the Actual Air Blast.

We find the real amount of air in a chemical way. We know that the same amount of nitrogen contained in the air blown into a blast furnace will be found in the waste gases. Since there are 79 volumes of nitrogen in 100 volumes of air, 100 volumes of nitrogen represent 126.5 volumes of air. By finding out the amount of nitrogen in the waste gases leaving the furnace per minute we can determine the amount of air represented by that amount of nitrogen.

Chemical analysis shows the composition of the waste gases. By computing the amount of carbon contained in the coke and limestone charged in the furnace per minute (about 4 per cent. carbon absorbed by the pig iron being deducted) we can obtain the amount of waste gases leaving the furnace per minute. If c_1 = carbon from coke, c_2 = carbon from limestone and c_3 = carbon going into pig, then

$c_1 + c_2 - c_3$ = amount of carbon leaving the furnace per minute.

This carbon is contained in the waste gases as carbon monoxide (CO), as carbon dioxide (CO_2), or as methane (CH_4). In CO 0.4286 of the total weight is carbon; in CO_2 0.2727 of the total weight is carbon; in CH_4 0.75 of the total weight is carbon. Analysis shows exactly the amount of carbon in each of these three components of the waste gases leaving the furnace per minute, and also the amount of waste gases per minute. By using analysis we also obtain the amount of nitrogen leaving the furnace per minute, and having the nitrogen we at once know the amount of air entering the furnace per minute. The waste gases are composed of the following:

	Per cent. by volume.	Per cent. by weight.
N	55.5	54.5
CO_2	10.5	16.2
CO	27.0	26.4
H	2.6	0.2
CH_4	0.4	0.2
H_2O	4.0	2.5
Totals	100.0	100.0

The weight per cent. of the carbon in the waste gases is found by multiplying the percentage by weight of each of the gases of which it is a part by the percentage in which it exists in these gases, respectively. We thus have:

Carbon in $CO_2 = 16.2 \times 0.2727 =$ 4.417
Carbon in $CO = 26.4 \times 0.4286 =$ 11.315
Carbon in $CH_4 = 0.2 \times 0.75 =$ 0.15
Total 15.88

Thus, 1 pound of carbon in the waste gases is distributed among these three components of the waste gases in the following proportions:

In CO_2 = ... 0.278 pound.
In CO = ... 0.712 pound.
In CH_4 = ... 0.01 pound.
Total 1.000

Carbon in the Furnace Charge.

The average product of the blast furnace under consideration is 400 tons daily.

Coke per ton of pig iron = ... 2,400 pounds.
Limestone per ton of pig iron = ... 920 pounds.
Fixed carbon in coke = ... 84 per cent.
Carbon going into pig iron = ... 4 per cent.

The amount of carbon in the coke charged in the furnace per day is:

$2{,}400 \times 400 \times 84 \div 100 = c_1 = 806{,}400$ pounds of carbon.

In limestone 43 per cent. by weight is CO_2, and as 27.27 per cent. by weight of CO_2 is carbon, the carbon in the limestone is 11.73 per cent. by weight. Hence, the amount of carbon from the limestone charged into the furnace per day is as follows:

$$c_2 = \frac{920 \times 400 \times 11.73}{100} = 43{,}166 \text{ pounds carbon.}$$

The calculation for the 4 per cent. of carbon entering into the pig iron is as below:

$$c_3 = \frac{400 \times 2{,}240 \times 4}{100} = 35{,}840 \text{ pounds carbon.}$$

Then:

$c_1 + c_2 - c_3 = 806{,}400 + 43{,}166 - 35{,}840 = 813{,}726$ pounds carbon.

which is the amount leaving the furnace in 24 hours, ignoring the small amount going off in flue dust.

It could be easily figured how much carbon is distributed to each of the components of the waste gases, but it is sufficient to figure it only for one of them; for instance, for carbon monoxide, CO, and then to find out the whole amount of the waste gases.

Out of every pound of carbon .712 pound enters into CO. In 24 hours we should have 813,726 pounds carbon $\times$ 0.712 = 579,373 pounds carbon, which means 1,351,870 pounds CO. Since 1 cubic foot of CO weighs approximately .01 pound, the volume of CO would be 13,518,700 cubic feet.

As the waste gases contain 27 per cent. by volume of CO, the amount of waste gases leaving the furnace during 24 hours would be:

$$\frac{100 \times 13{,}518{,}700}{27} = 50{,}069{,}259 \text{ cubic feet of waste gases.}$$

In one minute the amount of waste gases would be 34,770 cubic feet. These 34,770 cubic feet of waste gases contain 55.5 per cent. by volume of nitrogen = 19,297 cubic of nitrogen; 79 volumes of nitrogen = 100 volumes of air; 100 volumes of nitrogen = 126.5 volumes of air; 19,297 volumes of nitrogen = 24,411 volumes of air blown into the furnace per minute. We then have:

	Cubic feet.
Theoretical amount of air blown per minute =	42,718
Actual amount of air blown per minute =	24,411
Loss per minute =	18,307

or 42.8 per cent.

In such a case the blowing engines, the main and the stoves must be thoroughly examined to discover the leakage. Of course the loss indicated is much in excess of ordinary air losses. This is due to the fact that the analyses of waste gases as given above are estimated and not actual.

Reports concerning destructive forest fires in the northern peninsula of Michigan on May 18 and 19 put the area burned over at 100 square miles. It is stated that Quinnesec, once a prominent iron mining town on the Menominee range, but latterly containing but a small population, was wiped out. Dispatches also say that few houses were saved at Antoine, on the same range.

PERSONAL.

H. Edsil Barr has severed his connection with the Blaisdell Machinery Company, Bradford, Pa., which has extended over a period of six years, to establish himself at 24 Jerome avenue, Bradford, as designing and consulting engineer. Having made a specialty of gas engines and air compressors he will give particular attention to such matters, but will also handle a line of engines, compressors, refrigerating machines, &c., as manufacturers' agent. Mr. Barr has been instrumental in developing the horizontal double acting gas engine in this country, having designed the engine of this type built by the Blaisdell Machinery Company, of which there are a goodly number in successful operation.

The Wellman-Seaver-Morgan Company's Pacific Coast office, formerly at San Francisco, is now temporarily located at 220 Twelfth street, Oakland, Cal.

C. S. Robinson has resigned his position as general manager of the iron and steel departments of the Colorado Fuel & Iron Company. The resignation will take effect about June 1. Mr. Robinson has been connected with the Minnequa plant of the company in Pueblo for more than ten years, and during much of this time has had charge of the plant and of the iron mining operations of the company in the various States in which these developments are carried on. It is intimated that he intends to form a connection with some other steel company.

H. C. Baker, formerly in charge of the Atlanta office territory of the Crocker-Wheeler Company, has been transferred to San Francisco, where he will take charge of the company's Pacific Coast business. The offices at Fremont and Howard streets, San Francisco, were completely destroyed by the recent fire. Temporary offices have been established at 2611 Broadway.

George F. Knapp, for a number of years manager of the sales department of Oglebay, Norton & Co., Cleveland, Ohio, dealers in iron ores, has resigned to open an office in Cleveland as consulting engineer. Mr. Knapp represented the above firm in Philadelphia for several years following 1905, and later went to the Cleveland office when the Spanish-American Iron Company changed hands, Mr. Knapp having sold its Cuban ores for Oglebay, Norton & Co. in the East. He has had a varied experience in blast furnace and steel works operations, as well as in iron ore mining and selling.

Charles T. Allen, for many years connected with the pump industry of Battle Creek, Mich., has disposed of his holdings in the Union Steam Pump Company. Mr. Allen is recovering from a recent severe illness and will take a much needed rest.

David T. Croxton, who has been general manager of the Cleveland Furnace Company, Cleveland, Ohio, since its organization, was recently elected president of the company, succeeding D. B. Meacham of Cincinnati, who becomes vice-president. S. W. Croxton, heretofore vice-president, is now chairman of the Executive Committee. C. B. Smith is secretary and treasurer of the company, and George M. Black has been recently appointed superintendent.

W. B. Castle, Cleveland, Ohio, who was secretary of the Republic Iron Company previous to its acquisition by the Cambria Steel Company and who in recent years has represented the Wolvin Line of lake freighters at Cleveland, has resigned to become connected with the firm of James Pickands & Co., at Marquette, Mich.

Warner Shook, superintendent of blast furnaces at Ensley, Ala., for the Tennessee Coal, Iron & Railroad Company, has been elected general manager of the Central Iron & Coal Company, and goes with that company June 1. The Central Iron & Coal Company has a blast furnace at Holt, Tuscaloosa County, Ala.

At the recent meeting of the Iron and Steel Institute in London announcement was made of the award of a £100 Carnegie scholarship to E. Hess of the United States and of a grant of £50 to H. C. Boynton, instructor in metallurgy at Cambridge, Mass.

Francis C. Pratt, secretary of the Pratt & Whitney Company, Hartford, Conn., has resigned to accept a position with the General Electric Company at the Schenectady works. Mr. Pratt is the son of the late F. A. Pratt, one of the founders of the Pratt & Whitney Company. The office which he vacates will be filled by Charles L. Cornell, secretary of the Niles-Bement-Pond Company, of which the Pratt & Whitney Company is an underlying corporation.

J. A. Hatfield, president of the American Bridge Company, has returned from abroad.

Robert Geddis of the sales department of the Jones & Laughlin Steel Company, Pittsburgh, has gone to the Pacific Coast on business pertaining to the San Francisco office of the company which was destroyed, but which has since been established temporarily at San Mateo, Cal.

Francis L. Robbins, chairman of the Board of Directors of the Pittsburgh Coal Company, has been granted a six months' leave of absence. Mr. Robbins will probably go abroad.

Some changes have been ma among officials of the Homestead and Clairton works o the Carnegie Steel Company. The office of general superintendent of the open hearth departments of the Homestead Steel Works has been created and Reese James, superintendent of open hearths Nos. 1 and 2, has been appointed to the place, which includes supervision over the four open hearth departments, including the one now building. Lee S. Unger, brother of John S. Unger, assistant general manager of the Homestead Works, has been appointed assistant general manager of the Clairton works. Mr. Unger was assistant superintendent of the 35 and 40 inch mills, and is succeeded there by Samuel Paisley, who has been at the 28 and 38 inch mills. H. J. Hyde succeeds Mr. Paisley.

Charles E. Dinkey, general superintendent of the Edgar Thomson Steel Works of the Carnegie Steel Company, Bessemer, Pa., will sail for Europe about June 1. Heads of departments and foremen have presented Mr. Dinkey with some traveling articles.

J. A. Durfee, superintendent of the Ensley, Ala., plant of the Tennessee Coal, Iron & Railroad Company, will succeed C. S. Robinson as general manager of the Colorado Fuel & Iron Company at Pueblo, Col.

The Tennessee Coal, Iron & Railroad Company.—This company has issued its full report for the year ending December 31, 1905, regarding which a preliminary statement was published some months since. Among the additional data now given are the following figures showing capital expenditures in 1905 for new construction and the improvement of plants and additions to the property account, compared with the previous year:

New construction.	1905.	1904.	Increase.
At blast furnace plants.....	$452,710	$605,079	*$152,369
At coal properties.....	448,307	177,303	271,004
At iron mines and limestone quarries	80,105	247,273	*167,168
At Ensley Steel Works.....	359,050	139,517	219,533
Miscellaneous improvements..	7,282	5,104	2,178
Totals.....	$1,347,454	$1,174,276	$173,178
Less sales of plant and equipments	121,270	.....	121,270
Balance new construction.	$1,226,184	$1,174,276	$51,908
Additions to land account and surveys	110,185	94,710	15,425
Less sales of land, royalties, &c.	22,803	36,883	*14,080
Balance land account....	$87,332	$57,827	$29,505
Totals.....	$1,313,516	$1,232,103	$81,413

* Decrease.

The average number of men employed in 1905 was 10,414, as compared with 8680 in 1904; the total amount paid in salaries and wages was $5,490,266, as against $5,041,246 in the previous year.

The Simplon Tunnel through the Alps, connecting Italy and Switzerland, was formally opened May 19 by King Victor Emanuel, who with a party passed through the tunnel on the first train. This tunnel is regarded as one of the greatest engineering achievements of the age and is expected to be in full operation next September.

NEWS OF THE WORKS.

Iron and Steel.

Henry Linn, a prominent capitalist and promoter of Guthrie, Okla., is at the head of a company which proposes to build a large steel plant in the Southwest. Mr. Linn favors Tulsa, Ind. Ter., as the location.

The court has ordered Receiver C. A. Ford of the Atlanta Tinplate & Rolling Mill Company, Atlanta, Ind., to sell the plant at private sale on May 25. The terms are one-half cash and one-half in six months. The plant represents an investment of $350,000. Included in the sale will be $11,000 subscriptions by citizens and $8190 subscriptions by workmen.

The Republic Iron & Steel Company, which has dismantled part of its mill at Muncie, Ind., will continue to operate the nut and bolt department and will combine with it the turnbuckle plant now at Brazil, Ind.

With the shipment of a 2500 horse-power engine to the Superior Steel Company, Carnegie, Pa., the dismantling of the rolling mill that was the leading industry of Indianapolis, Ind., in the 70's is complete. The Central Steel Company, which was the last to operate the plant, ceased operations about eight years ago and the work of dismantling has been going on piecemeal ever since, a large part of the machinery going to Collingwood, Ont., three years ago. The engine, weighing 180 tons, was sold for $6000.

The plant of the Ohio Valley Steel & Foundry Company, at Paden City, W. Va., which was recently purchased by Robert A. Carter, is to be operated by the Carter Iron Company, which has just been organized. The new company will erect a steel building to contain 24 large patent puddling furnaces and a bar mill and will roll iron sheet bars for sheet mill purposes. It is expected that the plant will be in operation about August 1. Offices have been established in the Park Building, Pittsburgh.

Owing to the largely increased demand for its Sanderson steel, the Crucible Steel Company of America is enlarging the Sanderson works at Syracuse, N. Y., by the addition of two 24-pot crucible melting furnaces.

The report that the Sharpsville Furnace Company, recently organized to operate the old Sharpsville furnace at Sharpsville, Pa., will build a new furnace and also a steel plant is untrue. The new company will operate the present blast furnace at Sharpsville after certain repairs and improvements now being made are completed. The stack is expected to be ready for blast by July 1.

The Ontario Iron & Steel Company last week commenced work on the building of its plant at Welland, Ontario.

Dr. W. H. Fetter, of Scottdale, Pa., and associates, have purchased the West End rolling mill from the Iron Company of America, located at Roanoke, Va., and it is the intention to put the plant in operation. Included in the purchase are 10 or 12 acres of ground, and the price paid for the property was about $30,000.

The Keystone Furnace of the Reading Iron Company, Reading, Pa., has been blown out for repairs after a campaign of two years. The work in that period was highly successful. Most of the other furnaces in the Reading district are working.

The Central Iron & Steel Company is repairing its No. 2 furnace at Harrisburg, Pa. It will install the hot metal route between its Paxton furnaces and its new open hearth steel plant this fall.

The Pennsylvania Steel Company has blown out its No. 4 furnace at Steelton, Pa., for repairs.

A strike of foreign laborers caused a short suspension of operations at the Sheridan Furnace of the Berkshire Iron Works, near Lebanon, Pa.

The Harrisburg Rolling Mill Company is operating its plant at Lochiel, near Harrisburg, Pa., chiefly on bars, having recently made changes in its equipment. It is running three mills.

The Donaghmore Iron & Steel Company has been organized at Lebanon, Pa., and will handle heavy material, such as boilers, boiler plate in sheets and rings, heavy castings of all sizes and weights, structural material, bridge iron, I beams, &c.

General Machinery.

The William Ganschow Company, Chicago, has incorporated as successor to the business conducted during the past two years by the Estate of Wm. Ganschow. The company is incorporated for $10,500 and does gear cutting and milling work.

The South Bend Supply Company has been organized at South Bend, Ind., to deal in machinists' tools and mill supplies. The company is composed of F. W. Long, formerly of Fort Wayne, Ind.; C. H. Dunfee of Raber, Ind., and Albert N. Long of Kendalville, Ind.

Mackintosh, Hemphill & Co., Pittsburgh, are shipping to the Youngstown Sheet & Tube Company, Youngstown, Ohio, a universal plate mill which will take an ingot 14 x 42 inches, and will roll plates from 7 to 42 inches wide and 1¼ inches thick. The horizontal rolls are 27 inches in diameter by 6 feet in body. A special feature of the construction of this mill is that by removing the vertical rolls and installing a special designed feed roller table, plate up to 66 inches wide can be rolled in the same manner as on an ordinary plate mill. By having the mill thus equipped it can turn out wide plates by simply making the above changes.

The Livermore Foundry & Machine Company, Memphis, Tenn., one of the oldest concerns in the South, is making extensive changes and improvements in the mechanical equipment. L. E. Traylor has recently been chosen general manager.

A. W. Kilbourne, 450-452 West Spring street, Columbus, Ohio, is erecting a new shop, 30 x 125 feet, with additions, which will be equipped with the necessary machinery for rebuilding and repairing second-hand machinery. The new plant will be located in the rear of the present warehouse on the Columbus & Hocking Valley Railroad.

Power Plant Equipment.

The Penn Hardware Company, Reading, Pa., is installing a 150 horse-power Koerting gas engine to be run on producer gas furnished by a Koerting suction producer. The entire plant is supplied by the De La Vergne Machine Company, New York.

The Wabash Artificial Ice Company, just organized at Wabash, Ind., will erect a plant. The capital stock is $50,000.

The Stanley-G. I. Electric Mfg. Company's San Francisco office, which is now occupying temporary quarters in the Blake Block, Oakland, announces that it will move next week into rooms 403, 404 and 405 Atlas Building, 604 Mission street, San Francisco.

Bids will be received by the President of the Borough of Queens in the Borough Hall, at Fifth and Jackson avenues, Long Island City, on Monday, for furnishing a 100 horse-power horizontal boiler and fixtures for the Far Rockaway sewage disposal plant. The contract will include setting up the boiler ready for service.

Bridges and Buildings.

The Modern Steel Structural Company, Waukesha, Wis., has been awarded the contract for furnishing and erecting about 2900 tons of structural material required in the erection of a new stock house for the Schlitz Brewing Company, Milwaukee.

The Central States Bridge Company, Indianapolis, Ind., has just completed the installation in its yard of a large 90-foot steel derrick and four small ones. Considerable equipment has also been added in the way of machinery for heavy concrete work, including five concrete mixers, four large pumps, four large steel and several small wooden derricks, boats, hoisting engines, pile drivers and an Ingersoll-Sargent air compressor producing 350 cubic feet of air per minute. The company has recently taken some creditable contracts, including one bridge in the city of Indianapolis of five spans, weighing about 75 tons per span; concrete melan arch bridge requiring 200 tons of steel and 15,000 barrels of cement; steel bridge of eight spans over the Miami River at Dayton, Ohio; steel bridge for the Indiana & Southern Michigan Electric Railway at Miles, Mich., 1225 feet long; viaduct at Lexington, Ky., 700 feet long, and one 6-story and one 11-story steel frame buildings in the city of Indianapolis.

The Canada Foundry Company, of Toronto, has been awarded the contract for bridge material for all permanent bridges to replace wooden bridges and trestles on the line of the Niagara, St. Catherines & Toronto Railway, also for all bridge material for that company's new extension from Thorold to Welland and Fonthill.

The contract for the large steel pier shed to be constructed at Locust Point, Md., for the Baltimore & Ohio Railroad, has just been awarded to the Baltimore Bridge Company, of Baltimore and New York. It is to be designated as No. 8, and will be one of the largest in existence, if not the largest. It will be of the double deck type, built of steel and covered with corrugated iron. It will be 930 feet long and 138 feet wide, which is somewhat longer than the longest of the great Hoboken piers. There will be about 2000 tons of structural steel and more than 2,000,000 feet of timber flooring used in its construction. Railroad tracks will run directly into the shed, so that the cars may be unloaded or loaded directly into or from the steamers lying on each side of the pier. The contract calls for the construction of the complete pier ready for the installation of traveling cranes, which are to be purchased by the railroad company. The shore end will be fitted up for offices and complete steam heating and plumbing systems will be installed. The Baltimore Bridge Company will fabricate the structural steel in its own shops and erect it, as well as all timber and other work, with its own plant and men, ready for the installation of traveling cranes by the railroad company.

Among orders received by the Pittsburgh Steel Construction Company, Pittsburgh, is one for an addition to the plant of the Keystone Driller Company, Beaver Falls, Pa., that will require about 200 tons of structural steel, and an extension to the Moline, Ill., plant of the Republic Iron & Steel Company, which will take about 200 tons. The company has booked further orders for about 1000 tons of material during May.

Foundries.

The Federal Steel Castings Company, Chester, Pa., has been formed with a capital of $500,000, and a Pennsylvania charter has been applied for. The company has taken over the plant of the late Delaware River Steel Castings Company, and it is now being put in shape for operation. The capacity of the plant will be doubled at once. Orders for castings have al-

ready been booked, and it is anticipated that the first heat will be run by the middle of next month.

George H. McKinley, Moline, Ill., is making arrangements to establish a brass and aluminum foundry and will shortly commence the erection of a building, 36 x 70 feet. A pattern shop may also be added and an iron cupola installed. The equipment will include a gasoline engine, grinding machinery, pump and possibly pattern making machinery.

The El Paso Foundry & Machine Company, El Paso, Texas, has procured 30 acres in Bassett's addition to that city and will build a large and modern plant. The capacity will be increased five fold.

The Geneva Foundry & Machine Company, Geneva, N. Y., has recently added to its foundry equipment a No. 54 Newten cupola, made by the Northern Engineering Works, Detroit, Mich.

The Scullin-Gallagher Iron & Steel Company, St. Louis, Mo., has received an order for 7500 bolsters for 3250 cars to be built by the American Car & Foundry Company for the St. Louis & San Francisco Railroad.

The East Liverpool Foundry, Machine & Supply Company, East Liverpool, O., recently incorporated, is operating its old plant at that place. Work is to commence in a short time on a new foundry and machine shop, for which equipment will be purchased. Geo. A. Anderson is general manager.

Fires.

The two great New York refuse incinerating plants of the Sanitary Utilization Company, consisting of 16 buildings on Barren Island, were burned May 20. The loss is placed at $1,000,000.

The foundry of the Ambrose Mfg. Company, St. Joseph, Mo., was recently burned. The loss is about $12,000.

Part of the oilcloth works of Thomas Potter, Sons & Co., Philadelphia, Pa., was destroyed by fire May 19. The loss is said to be $50,000.

The plant of the New York Glucose Company, at Shadyside, N. J., was wrecked by an explosion May 22.

The tipple, power house and generator of the Pursiovo Coal Mines, near St. Clairsville, Ohio, were burned May 20, with a loss of $30,000.

Hardware.

Standard Horse Nail Company, New Brighton, Pa., has just given out a contract for an addition to its plant in the shape of a brick building, 45 x 166 feet, with truss and slate roof. The demand for the company's product is such that the factory is now running until 9 p.m. daily.

The Combination Farm Tool Company has been incorporated at Indianapolis, Ind., with $10,000 capital stock. The directors are Wm. Foor, H. A. Adams and F. E. Foor.

The Hoosier Mfg. Company, Newcastle, Ind., will add four buildings to its present plant, which, it is said, will then make it the largest kitchen cabinet factory in the world.

Hagey Stove Company, 1122-1128 South Twelfth street, St. Louis, Mo., manufacturer of Hagey King wood heaters, has recently increased its manufacturing facilities so as to enable it nearly to treble its output.

Adrian Wire Fence Company, Adrian, Mich., has doubled its capacity for 1906. A new warehouse, 80 x 400 feet, with a covered platform 14 feet wide alongside, has also been completed. Everything is car level, bringing the cost of handling the product down to a minimum. The daily output of the plant is about 35 miles of wire fence.

Chattanooga Iron & Wire Works, Chattanooga, Tenn., several months since moved into a new and larger building, this change of base being necessitated by the material increase in the company's business. The company manufactures iron fencing and practically everything required in the way of ornamental and light structural material for buildings as well as all kinds of wire work, such as office railing, window guards, &c.

Miscellaneous.

The Union Switch & Signal Company, Swissvale, Pittsburgh, has completed a new building, which will add considerably to the capacity and facilities of the plant. This structure has a floor space of 16,000 square feet. It will be used as an assembling shop for signalling apparatus, and it enables the company to add several hundred men to its force. The Swissvale shops are now going through the busiest time in the company's history, and are turning out more railroad signals and safety appliances than ever before.

The city of Marion, Ind., has contracted to give to the Marion Iron & Brass Bed Company a bonus of $15,000 for the erection of a new factory to manufacture beds and springs. The plans contemplate seven one-story fireproof buildings with an aggregate of 80,000 square feet.

The E. R. Thomas Detroit Company has filed papers of incorporation with the Secretary of State in Lansing, Mich., and will engage in the manufacture of automobiles in Detroit. The company is capitalized at $300,000, the bulk of which is controlled by the members of the E. R. Thomas Automobile Company, Buffalo. The other stockholders are: J. J. Brady, formerly of the Oldsmobile Company; H. E. Coffin and Fred. C. Benzen of Detroit. Roy S. Chapin of Lansing, Mich., will act as manager of the new plant. It is intended to use this new factory for the manufacture of light touring cars to add to the Thomas line. The Buffalo factory will of course be continued, and large additions are now being made to it.

The Crouse-Tremaine Carbon Company, Fostoria, Ohio, is erecting a new plant, consisting of an office building and six manufacturing buildings, of fireproof construction, containing over 500,000 square feet of floor space, including a large furnace building and a central power station, which will furnish power not only for this plant, but for affiliated companies at that point. J. B. Crouse and H. A. Tremaine of Cleveland are at the head of the company.

The Seneca Wire & Mfg. Company, which recently erected a new plant at Fostoria, Ohio, has commenced operations on a small scale. A power plant is now being installed, and additional machinery is being received, which will soon bring the plant up to its full capacity. The company has a large number of orders on hand and will commence running with a double shift in about two weeks.

The Ohio Pressed Sheet Steel Company, recently formed at Alliance, Ohio, to manufacture stove pipe elbows and other pressed metal goods, expects to commence operations within 30 days. The machinery equipment, consisting of dies and presses, has been received and power equipment is now being installed in the new plant.

The Mahoning Pattern Company, Youngstown, Ohio, is erecting a new factory in which considerable additional machinery will be installed. C. A. Steiner and E. S. Barnes are at the head of the company.

The Kraushaar Brass Mfg. Company, St. Louis, Mo., has removed its salesroom to 1107 Locust street. The company has increased its capital stock from $50,000 to $150,000.

The Flexible Tire Company, Incorporated, Springfield, Mass., has been incorporated in Massachusetts with authorized capital stock of $60,000, to manufacture a flexible steel automobile tire, the invention of William G. Marr of Springfield. The officers are: President, William G. Marr; treasurer, Richard J. Talbot, and clerk, James P. Hibbard, all of Springfield. It is the intention to manufacture for the market as soon as experimental tires have been tried out.

The Marion Iron & Brass Bed Company has been incorporated at Marion, Ind., with $150,000 capital stock, to manufacture and sell iron and brass beds. The directors are George C. Harwood, Chas. G. Barley and Seneca W. Winder.

The organization of the Clay Center Windmill & Foundry Company, Clay Center, Kan., has been completed. The officers are: President, S. E. Keen; vice-president, F. L. Williamson; secretary, W. A. Munson; treasurer, F. H. Myers, and these with E. H. Swenson comprise the Board of Directors. The company plans to increase its facilities at an early date.

The International Harvester Company, Chicago, has purchased a block of ground adjoining the Weber wagon plant, which was acquired by the company some time since, so that it now owns all the property between Eighty-first and Eighty-third streets and Wallace street and the Rock Island tracks. The property just acquired will be used for some time for storage yard purposes in connection with the wagon manufacturing plant, but a large part of it will eventually be improved.

The Ideal Ventilator Company, Providence, R. I., has opened a Chicago office at 154 Lake street. C. E. Munroe, president and general manager of the company, is at Chicago in the interest of this branch office.

The Simonds Mfg. Company, Chicago, maker of crucible sheet steel, saws and machine knives, is erecting a new office and stock room building, two stories, 74 x 130 feet.

The Taunton Crucible Company, Taunton, Mass., having outgrown the plant it occupied since 1865, has erected a new three-story modern plant on the site of the works it bought from the American Smelting & Refining Company.

The American Axle Works, Philadelphia, Pa., having found that its facilities are not equal to the demand for its products, has engaged Dodge & Day, engineers, Philadelphia, to investigate and report on what changes should be made to the plant and what additional buildings should be undertaken to enable the company to increase its capacity about 50 per cent.

The East Butler Land Company has made arrangements with Robert Naysmith and George A. Martin, of Pittsburgh, with others, to establish a factory at East Butler for the making of brass and iron beds.

The Broderick & Bascom Rope Company, St. Louis, Mo., will shortly let contract for the erection of a new wire rope plant.

The exports of steel rails from Great Britain in April were 32,841 gross tons, as compared with 37,190 tons in April, 1905, and 30,174 tons in April, 1904. The principal colonial demand was from British South Africa and British India, which together took about 12,000 tons in April. Little is being done by British rail makers with Australia and Canada.

The Iron and Metal Trades

The large Rail contracts recently reported for delivery in 1907 contrast with conditions in other finished lines, where buyers as a rule show no eagerness. It is estimated that 900,000 tons of Rails have now been definitely closed for next year and that nearly 300,000 tons in addition will be carried over from this year. The Southern mill is booked to July 1, 1907, having recently sold a round tonnage to the Southern Pacific. The forwardness of the railroads is calculated to help counteract the hesitation shown by many consumers. In some quarters sales organizations, long used to order books written up months ahead of rollings, are not entirely complacent under present conditions.

The Foundry Pig Iron market is easy under continued inaction. The machinery founders and molders in the various centers involved in strikes are evidently settling down to a test of endurance. Some scattering buying in the East and New England shows that on close competition 25 cents a ton has come off recent prices. In the Central Western Valleys, No. 2 Foundry has touched $16, and on malleable business, in which some little inquiry appears, $15.80 has been done. A contract indicating how closely steel making irons are being swept up has been made by a small Shenango Valley furnace about to start, after long idleness. A Pittsburgh Steel company has taken the entire output for the second half. Virginia basic is finding its way into Western Steel foundry districts at slight concessions. An Ohio pipe foundry is about to close for 12,000 tons of Southern iron and Eastern pipe foundries are feeling the market.

The Billet market is working into a freer condition, more Steel being available. In Sheet Bars the situation is more troublesome and Sheet mills are falling behind on their deliveries.

Important contracts for Structural Steel for New York work are practically closed, 28,000 tons for the Hudson Company's tunnel terminal and 12,000 tons for the City Contracting Company's Cortlandt street building. The Open Hearth building of the Gary, Ind., plant of the Steel Corporation has been placed and takes 15,000 tons. At Milwaukee a 2800-ton contract is announced.

Attention is still converging on the Bar situation. Large contracts are pending; the question is one of terms. In Bar Iron conditions are less satisfactory.

The New Orleans Cast Iron Pipe contract for 10,000 tons was divided between two Alabama foundries. Business in this line has never been better.

An advance from $3.60 to $3.75 per base box in the price of Tin Plate has come, tardily following the excitement in Pig Tin. But Tin Plate manufacturers are largely sold up for the year.

A Comparison of Prices.

Advances Over the Previous Month in Heavy Type, Declines in Italics.

At date, one week, one month and one year previous.

	May23, 1906.	May16, 1906.	Apr.25, 1906	May24, 1905.
PIG IRON, Per Gross Ton:				
Foundry No. 2, Standard, Philadelphia	$18.50	$18.50	$18.50	$17.25
Foundry No. 2, Southern, Cincinnati	16.75	16.75	16.75	15.75
Foundry No. 2, Local, Chicago	*18.50*	18.50	18.75	17.25
Bessemer, Pittsburgh	18.10	18.10	18.10	16.10
Gray Forge, Pittsburgh	*16.50*	16.50	16.60	15.50
Lake Superior Charcoal, Chicago	*19.00*	19.00	19.25	17.50
BILLETS, RAILS, &c., Per Gross Ton:				
Bessemer Billets, Pittsburgh	*26.00*	26.00	27.00	23.00
Forging Billets, Pittsburgh	32.00	32.00	32.00	26.00
Open Hearth Billets, Phila	*28.50*	29.00	29.00	27.00
Wire Rods, Pittsburgh	**34.50**	34.50	34.00	34.00
Steel Rails, Heavy, Eastern Mill	28.00	28.00	28.00	28.00
OLD MATERIAL, Per Gross Ton:				
O. Steel Rails, Chicago	14.00	14.00	14.00	13.00
O. Steel Rails, Philadelphia	*16.25*	16.50	17.25	16.00
O. Iron Rails, Chicago	21.25	21.25	21.25	18.00
O. Iron Rails, Philadelphia	*21.00*	21.00	21.50	20.00
O. Car Wheels, Chicago	19.00	19.00	19.00	14.75
O. Car Wheels, Philadelphia	**17.00**	16.75	16.75	16.00
Heavy Steel Scrap, Pittsburgh	*14.50*	15.00	15.00	14.50
Heavy Steel Scrap, Chicago	**14.00**	13.50	13.50	12.00
FINISHED IRON AND STEEL, Per Pound:	Cents.	Cents.	Cents.	Cents.
Refined Iron Bars, Philadelphia	1.63½	1.63½	1.63½	1.63½
Common Iron Bars, Chicago	1.66½	1.66½	1.66½	1.55
Common Iron Bars, Pittsburgh	1.50	1.50	1.50	1.50
Steel Bars, Tidewater, New York	1.64½	1.64½	1.64½	1.64½
Steel Bars, Pittsburgh	1.50	1.50	1.50	1.50
Tank Plates, Tidewater, New York	1.74½	1.74½	1.74½	1.74½
Tank Plates, Pittsburgh	1.60	1.60	1.60	1.60
Beams, Tidewater, New York	1.84½	1.84½	1.84½	1.74½
Beams, Pittsburgh	1.70	1.70	1.70	1.60
Angles, Tidewater, New York	1.84½	1.84½	1.84½	1.74½
Angles, Pittsburgh	1.70	1.70	1.70	1.60
Skelp, Grooved Steel, Pittsburgh	1.57½	1.57½	1.57½	1.50
Skelp, Sheared Steel, Pittsburgh	1.60	1.60	1.60	1.55
SHEETS, NAILS AND WIRE, Per Pound:	Cents.	Cents.	Cents.	Cents.
Sheets, No. 27, Pittsburgh	2.25	2.25	2.25	2.20
Wire Nails, Pittsburgh	1.85	1.85	1.85	1.80
Cut Nails, Pittsburgh	1.80	1.80	1.80	1.80
Barb Wire, Galv., Pittsburgh	2.30	2.30	2.30	2.25
METALS, Per Pound:	Cents.	Cents.	Cents.	Cents.
Copper, New York	**18.75**	18.75	18.62½	15.00
Spelter, St. Louis	*5.80*	5.85	6.05	5.30
Lead, New York	**6.00**	6.00	5.50	4.50
Lead, St. Louis	**5.90**	5.87½	5.40	4.40
Tin, New York	**41.90**	49.00	39.80	30.25
Antimony, Hallett, New York	**27.00**	26.50	21.00	8.87½
Nickel, New York	40.00	40.00	40.00	40.00
Tin Plate, Domestic, Bessemer, 100 pounds, New York	**$3.94**	$3.79	$3.79	$3.74

Chicago.

FISHER BUILDING, May 23, 1906.—(*By Telegraph.*)

The confidence displayed by the railroads in future trade conditions, as indicated by their heavy Rail purchases for 1907, has greatly strengthened underlying market conditions and has swept away whatever skepticism existed as to a continuation of the present prosperity in the Iron and Steel trade. While the total orders already booked by all the mills approximates 900,000 tons, reservations for directorate confirmations and tonnage to be carried over already assure a total to the mills of 1,200,000 tons. Heavy Rail requirements necessitate large purchases of Track Supplies, and specifications for rolling stock will be in proportion. The American Bridge Company has just received plans for the Open Hearth building to be erected at Gary, Ind., which will require 15,000 tons of Steel, the fitting to be done at Ambridge, Pa., and the Schlitz Brewing Company has awarded the contract for a plant at Milwaukee, into which 2800 tons of Shapes will enter. So far as new projects are concerned the building trade is experiencing a lull, but this breathing spell is welcomed by the fitters, who are generally filled up for at least four months. Two Birmingham Pipe foundries were the lowest bidders on 10,000 tons of Cast Pipe let by the city of New Orleans last week, and this disposes of the largest inquiry in the South or West. The advance in Tin Plate of 15c. a box, from $3.60 to $3.75, Pittsburgh, was not unexpected, on account of the recent sensational advances in Pig Tin. Sheet Zinc has declined 10c. The Pig Iron market is without feature, and the only inquiry of note has been received from an Ohio Pipe foundry for 12,000 tons of Southern.

Pig Iron.—Purchases have been limited to small lots for Western delivery, and the numerous inquiries for Malle-

able Bessemer which have been out for some time have not yet been acted upon. The molders' strike has curtailed the melt throughout this district to a considerable extent and the foundrymen affected are not considering future requirements. The Wisconsin foundry that made inquiry three weeks ago for its requirements for a period of five years has not yet closed, as the furnaces are not inclined to sell so far ahead, even on a monthly adjustment basis. The Massillon Iron & Steel Company, Massillon, Ohio, has inquired for 12,000 tons of Southern and will probably close before the end of the week. While the leading Southern interests are maintaining a basis of $14, Birmingham, on No. 2, concessions of 25c. a ton continue to be reported. Ohio furnaces are offering Malleable Bessemer in this market as freely as ever. Prevailing quotations, f.o.b. Chicago, are as follows:

Lake Superior Charcoal	$19.00 to $19.50
Northern Coke Foundry, No. 1	19 00 to 19.50
Northern Coke Foundry, No. 2	18.50 to 18.75
Northern Coke Foundry, No. 3	18.00 to 18.25
Northern Scotch, No. 1	19.50 to 19.75
Ohio Strong Softeners, No. 1	18.55 to 18.80
Ohio Strong Softeners, No. 2	18.05 to 18.30
Southern Coke, No. 1	18.25 to 18.40
Southern Coke, No. 2	17.65 to 17.90
Southern Coke, No. 3	17.15 to 17.40
Southern Coke, No. 4	16.65 to 16.90
Southern Coke, No. 1 Soft	18.15 to 18.40
Southern Coke, No. 2 Soft	17.65 to 17.90
Southern Gray Forge and Mottled	16.15 to 16.40
Malleable Bessemer	18.30 to 18.55
Standard Bessemer	19.30 to 19.55
Jackson Co. and Kentucky Silvery, 6 %	20.30 to 20.80
Jackson Co. and Kentucky Silvery, 8 %	21.30 to 21.80
Jackson Co. and Kentucky Silvery, 10 %	23.30 to 23.80

Metals.—The break in the foreign Tin market was reflected in declining prices in this country. The downward trend developed a laxity in demand, and the market is weak and unsettled at the prices now prevailing. Sheet Zinc has been reduced 10c. We quote: Casting Copper, 18¾c. to 18⅞c.; Lake, 18⅞c. to 19¼c., in car lots; small lots, ¼c. to ⅜c. higher; Pig Tin, car lots, 43½c. to 44c.; small lots, 44½c. to 45c.; Spelter, prompt delivery, 6.20c. to 6.35c., for car lots; Lead, Desilverized, 6.15c. to 6.25c., for 50-ton lots; Corroding, 6.65c. to 6.75c., for 50-ton lots; on car lots, 2¼c. per 100 lbs. higher; Cookson's Antimony, 33c., and other grades, 30c. to 31c.; Sheet Zinc is $7.65 list, f.o.b. Lasalle, in car lots of 60-lb. casks. On Old Metals we quote: Copper Wire, 16¾c.; Heavy Copper, 16¼c.; Copper Bottoms, 15½c.; Copper Clips, 15¾c.; Red Brass, 15½c.; Red Brass Borings, 13¾c.; Yellow Brass, 12¼c.; Yellow Brass Borings, 10¼c.; Light Brass, 8¾c.; Lead Pipe, 4¾c.; Tea Lead, 4½c.; Zinc, 4½c.; Pewter, No. 1, 24c.; Tin Foil, 32c.; Block Tin Pipe, 27½c.

(*By Mail.*)

Billets and Rods.—The Billet market is somewhat easier than it has been and earlier deliveries are being promised by the mills. Transactions, however, are limited to small lots. Forging Billets are offered at $34 to $35, f.o.b. Chicago, and Bessemer and Open Hearth Rods, $34.50 to $35.

Rails and Track Supplies.—It is estimated that the Rail mills of the country now have orders booked for 1,200,000 tons of Rails for 1907 delivery. This includes the mills of the Colorado Fuel & Iron Company and the Tennessee Coal, Iron & Railroad Company. The output of the latter has been sold up to July 1, 1907. The smaller Western roads are now estimating their future requirements and still further bookings are looked for within the next few weeks. The demand for Light Rails continues heavy and the local mill is not in position to make deliveries before August. We quote as follows: Angle Bars, accompanying Rail orders, 1906 delivery, 1.50c.; carload lots, 1.75c.; Spikes, 2.25c. to 2.35c.; Track Bolts, 2.65c. to 2.75c., base, Square Nuts, and 2.80c. to 2.90c., base, Hexagon Nuts. The store prices on Track Supplies range from 15c. to 20c. above mill prices. Light Rails, 30 to 45 lb. sections, $27 to $28; 25-lb., $29; 20-lb., $29 to $30; 16-lb., $30 to $31; 12-lb., $31 to $32, and lighter sections down to 8-lb., $38 to $40, f.o.b. mill. Standard Sections are unchanged at $28, f.o.b. mill, full freight to destination.

Structural Material.—The American Bridge Company has received specifications from the Illinois Steel Company for the Open Hearth building to be located at Gary, Ind. This will be one of the largest and heaviest mill buildings ever erected and will require 15,000 tons of material. It will contain 50 Open Hearth furnaces and four cranes, having a capacity of 75 tons each. The Modern Structural Steel Company, Waukesha, Wis., was awarded the contract for the new plant of the Schlitz Brewing Company, Milwaukee, for which 2800 tons of Steel will be required. Locally there are very few new projects of importance under way, and the building outlook is by no means as bright as it was three months ago. Structural fitters, however, welcome the lull, inasmuch as they have orders on their books for three to four months' delivery. Quotations are firm and unchanged, as follows: Beams and Channels, 3 to 15 inches, inclusive, 1.86½c.; Anges, 3 to 6 inches, ¼-inch and heavier, 1.86½c.; larger than 6 inches on one or both legs, 1.96½c.; Beams, larger than 15 inches, 1.96½c.; Zees, 3 inches and over, 1.86½c.; Tees, 3 inches and over, 1.91½c., in addition to the usual extras for cutting to extra lengths, punching, coping, bending or other shop work.

Plates.—While specifications for the sheared sizes are comparatively light, the consumers of Universal Plates are unable to secure satisfactory deliveries. During the past week the Atchison, Topeka & Santa Fé Railroad authorized the purchase of 2500 gondola Steel cars, and other Western roads are also figuring on future wants. Quotations are firm and unchanged, as follows: Tank quality, ¼-inch and heavier, wider than 6¼ and up to 100 inches wide, inclusive, car lots, Chicago, 1.76½c.; 3-16 inch, 1.86½c.; Nos. 7 and 8 gauge, 1.91½c.; No. 9, 2.01½c.; Flange quality, in widths up to 100 inches, 1.86½c., base, for ¼-inch and heavier, with the same advances for lighter weights; Sketch Plates, Tank quality, 1.86½c.; Flange quality, 1.96½c. Store prices on Plates are as follows: Tank Plate, ¼-inch and heavier, up to 72 inches wide, 2c. to 2.10c.; from 72 to 96 inches wide, 2.10c. to 2.20c.; 3-16 inch up to 60 inches wide, 2.10c. to 2.20c.; 72 inches wide, 2.35c. to 2.45c.; No. 8, up to 60 inches wide, 2.15c. to 2.25c.; Flange and Head quality, 25c. extra.

Sheets.—The Sheet market is without loss of strength, and few of the mills are in position to make deliveries on either Black or Galvanized Sheets in less than 60 days. The advance of 15c. a box on Tin Plate announced last week was not wholly unexpected, on account of the meteoric advances on Pig Tin. Quotations are firm, but unchanged, as follows: Blue Annealed, Nos. 9 and 10, 1.86½c. to 1.91½c.; Nos. 16 and 17, 2.06½c. to 2.11½c.; Box Annealed, Nos. 18 to 20, 2.26½c. to 2.31½c.; No. 27, 2.46½c. to 2.51½c.; No. 28, 2.56½c. to 2.61½c.; Galvanized Sheets, Nos. 10 to 14, 2.61½c.; Nos. 17 to 21, 2.86½c.; Nos. 22 to 24, 3.01½c.; Nos. 25 and 26, 3.21½c.; No. 27, 3.41½c.; No. 28, 3.61½c.; No. 30, 4.11½c. Sheets from store: Blue Annealed, Nos. 10 and 11, 2.10c. to 2.20c.; Nos. 12 and 13, 2.15c. to 2.25c.; Nos. 14 and 15, 2.20c. to 2.30c.; No. 16, 2.30c. to 2.40c. Box Annealed: Nos. 18 to 20, 2.50c. to 2.55c.; Nos. 22 to 24, 2.55c. to 2.60c.; No. 26, 2.60c. to 2.65c.; No. 27, 2.65c. to 2.70c.; No. 28, 2.75c. to 2.80c.; No. 30, 3.15c. to 3.20c. Galvanized from store: Nos. 10 to 20, 3c. to 3.05c.; Nos. 22 to 24, 3.15c. to 3.20c.; No. 26, 3.35c. to 3.40c.; No. 27, 3.55c. to 3.60c.; No. 28, 3.75c. to 3.80c.; No. 30, 4.95c. to 5c.

Bars.—While no large orders for Iron Bars are being booked, scattering small lots indicate a heavy consumption, and the Western mills are experiencing no difficulty in maintaining a basis of 1.50c., Pittsburgh. Steel Bar consumption continues extremely heavy, although mill specifications are not quite as large as earlier in the year. Quotations are unchanged, as follows: Iron Bars, 1.66½c.; Steel Bars, 1.66½c., both half extras; Hoops, 2.06½c., extras as per Hoop card; Bands, 1.66½c., as per Steel card; Soft Steel Angles and Shapes, 1.66½c., half extras. Store prices are as follows: Bar Iron, 2.10c.; Steel Bars, 1.85c., and as high as 2c. is asked on certain scarce sizes; Steel Bands, 1.85c. to 1.90c., half extras; Soft Steel Hoops, 2.30c. to 2.40c., full extras.

Merchant Pipe.—The demand has fallen off somewhat during the week, although specifications continue very heavy and deliveries on most merchant sizes cannot be made in less than two months. Quotations continue to be firmly maintained on a basis of 81 per cent. off the list, Pittsburgh, but official discounts on car lots, Chicago, remain unchanged, as follows: Black Steel Pipe, 78.35 per cent. on the base sizes, ¾ to 6 inches, and Galvanized, 68.35 per cent. Iron Pipe is quoted from 1½ to 2 points higher. From store in small lots Chicago jobbers are quoting 76½ to 77 per cent. on Black Steel Pipe, ¾ to 6 inches.

Boiler Tubes.—Practically all of the large consumers have covered their future requirements at the low prices that have been prevailing. Specifications are coming forward freely, indicating that the boiler shops throughout this section are well occupied. Discounts on base sizes, 2¾ to 5 inches, in car lots, are as follows: Steel Tubes, 68.35; Iron, 55.35; Seamless, 50.35; 2½-inch and smaller and lengths over 18 feet, and 2½-inch and lengths over 22 feet, 10 per cent, extra. Store prices are unchanged, as follows:

	Steel.	Iron.	Seamless.
1 to 1½ inches	40	35	42½
1⅝ to 2¼ inches	50	35	35
2½ inches	52½	35	30
2¾ to 5 inches	60	47½	42½
6 inches and larger	50	35	..

Cast Iron Pipe.—Bids for 10,000 tons of Pipe were opened by the city of New Orleans last week, and J. K. Dimmick & Co. and the American Pipe & Foundry Company, Birmingham, Ala., were the lowest bidders, on lots of 6000 and 4000 tons, respectively. While the awards have not been officially made, the contracts will go to these two concerns. This is the largest municipal letting that has been made in the South for some time, and deliveries are spread over the remainder of the year. Quotations continue to be maintained firmly, on the following basis: Water Pipe, 4-inch, $31; 6, 8, 10 and 12 inch, $30; over 12-inch, $29, with $1 extra for Gas Pipe. Large municipal contracts are usually placed at somewhat lower basis.

Merchant Steel.—Practically all irregularity on Shafting quotations has disappeared and prices are now being firmly maintained. Contracts are being closed by the implement makers for their requirements for the year from July 1. Specifications on special shapes continue light, as the implement season in the West is practically at an end. No changes have been made in prices, which are as follows: Planished or Smooth Finished Tire Steel, 1.86½c.; Iron Finish up to 1½ x ½ inch, 1.81½c.; Iron Finish, 1½ x ½ inch and larger, 1.66½c., base; Channels for solid rubber tires, ¾ to 1 inch, 2.16½c., and 1⅛ inch and larger, 2.06½c.; Smooth Finished Machinery Steel, 1.91½c.; Flat Sleigh Shoe, 1.71½c.; Concave and Convex Sleigh Shoe, 1.96½c.; Cutter Shoe, 2.35c.; Toe Calk Steel, 2.21½c.; Railway Spring, 1.86½c.; Crucible Tool Steel, 6½c. to 8c., and still higher prices are asked on special grades. Shafting, 50 per cent. off on car lots and 45 per cent. in less than car lots, in base territory.

Coke.—Comparatively low prices are now being made on both Connellsville and Virginia Foundry Coke shipped on consignment. Sales of high grade Connellsville Coke have been made on the basis of $2.85 at the ovens, although future requirements continue to be closed at $3. Virginia grades have been sold as low as $4.75, f.o.b. Chicago, although an effort is being made to maintain a basis of $5. By-Product Coke on contracts is held at $5.65, and in car lots for prompt delivery $5.80 is asked.

Old Material.—Consumption of all grades of Foundry Scrap has been materially curtailed on account of the molders' strike, the foundry melt of many of the shops throughout this district having been greatly reduced. Prices, on the other hand, remain practically unchanged, as many of the dealers are taking the railroad offerings at prices which would indicate that they anticipate a higher market in the near future. Consumers generally show no disposition to buy heavily on the present basis. The Chicago, Burlington & Quincy Railroad closes a list this week covering 2000 tons of material. The range of prices paid by large consumers to producers and dealers, per gross ton, car lots, f.o.b. Chicago, is as follows:

Old Iron Rails	$21.25 to $21.50
Old Steel Rails, 4 feet and over	16.00 to 16.50
Old Steel Rails less than 4 feet	14.00 to 14.50
Heavy Relaying Rails, subject to inspection, 50 pounds and under	27.00 to 27.50
Old Car Wheels	19.00 to 19.50
Heavy Melting Steel Scrap	14.00 to 14.50
Frogs, Switches and Guards	14.00 to 14.50
Mixed Steel	12.00 to 12.50

The following quotations are per net ton:

Iron Fish Plates	$16.50 to $17.00
Iron Car Axles	23.00 to 23.50
Steel Car Axles	18.00 to 18.50
No. 1 Railroad Wrought	14.50 to 15.00
No. 2 Railroad Wrought	13.50 to 14.00
Railway Springs	13.50 to 14.00
Locomotive Tires, smooth	14.00 to 14.50
No. 1 Dealers' Forge	12.00 to 12.50
Mixed Busheling	10.25 to 10.50
Iron Axle Turnings	10.25 to 11.00
Soft Steel Axle Turnings	10.25 to 11.00
Machine Shop Turnings	10.25 to 11.00
Cast Borings	8.75 to 9.00
Mixed Borings, &c.	8.75 to 9.00
No. 1 Mill	9.00 to 9.25
No. 2 Mill	8.00 to 8.25
No. 1 Boilers, cut to Sheets and Rings	9.50 to 10.00
No. 1 Cast Scrap	13.50 to 14.00
Stove Plate and Light Cast Scrap	11.00 to 11.50
Railroad Malleable	13.50 to 14.00
Agricultural Malleable	12.50 to 13.00

L. I. Bregman & Co., Iron and Steel Scrap, have removed their offices to 1634 First National Bank Building from 652 Railway Exchange Building, Chicago.

Officials of the United States Steel Corporation have closed a lease with the managers of the new Commercial National Bank Building, Chicago, by which they secure four entire floors of the new structure, giving 100,000 square feet of floor space. The new quarters will be occupied by the Illinois Steel Company, the American Steel & Wire Company, the American Bridge Company and other subsidiary companies of the corporation. The erection of the new plant at Gary, Ind., whose general offices will be in Chicago, is one of the factors responsible for the securing of larger quarters.

Birmingham.

BIRMINGHAM, ALA., May 21, 1906.

Pig Iron.—A number of good sized inquiries materialized during the latter part of the week, but sales have been practically confined to small lots for early shipment. Much inclination is shown to buy for immediate requirements, but a great deal of difficulty is being experienced in securing the desired grades. Several of the producers state that while their sales have all been small the aggregate tonnage sold exceeds their production, and so long as this state of affairs exists no weakening can be expected. The price of $14 for No. 2 Foundry seems as firmly established as ever, and as the makers appear to control the situation it is very probable that prevailing prices will continue for some time to come. A visit to the different furnaces fails to disclose any stocks whatever, except a few lots of off grade Iron, and at several the daily production is being loaded directly from the cast shed into cars for shipment. The output of Foundry Iron has been considerably reduced within the past few weeks, as several stacks heretofore making that grade are now running on Basic.

Cast Iron Pipe.—The 10,000 tons let by the city of New Orleans last week went to Birmingham foundries, 6000 tons being taken by the American Cast Iron Pipe Company and 4000 tons by the Dimmick Pipe Company. While this is the largest single order placed here, numerous small orders aggregating almost as much have been accepted. From the number of inquiries received daily this will probably be the banner year in the Cast Iron Pipe business.

The Beggs Pipe & Foundry Company has broken ground for a Soil Pipe plant at North Birmingham, which it is expected will be in operation within the next six months.

Old Material.—The market has been more active this week on certain grades, No. 1 Steel being the best seller. Very little change has been made in quotations, which are approximately as follows, per gross ton, f.o.b. cars dealers' yards:

Old Iron Rails	$19.00 to $19.50
Old Iron Axles	18.50 to 19.00
Old Steel Axles	16.00 to 17.00
Old Car Wheels	17.00 to 17.50
No. 1 Railroad Wrought	16.00 to 16.50
No. 2 Railroad Wrought	15.00 to 15.50
No. 1 Country Wrought	13.75 to 14.25
No. 2 Country Wrought	11.75 to 12.25
Wrought Pipe and Flues	11.75 to 12.25
Railroad Malleable	12.00 to 12.50
No. 1 Steel	12.00 to 12.50
No. 1 Machinery Cast	11.00 to 11.50
Stove Plate and Light Cast	9.00 to 9.50

Pittsburgh.

PARK BUILDING, May 23, 1906.—(*By Telegraph.*)

Pig Iron.—The Sharpsville Furnace Company, which expects to start its blast furnace at Sharpsville, Pa., very soon after June 1, has sold its entire output of Bessemer Iron for six months, or practically for all of this year, to the Jones & Laughlin Steel Company. The price was equal to about $17.25, at furnace. We also note a sale of 500 tons of Bessemer, and another of 600 tons at $17.25, Valley furnace. Bessemer Iron is scarce. Very little is to be had for delivery prior to July 1. There is some inquiry for Basic Iron, which is quite strong at $17, at furnace. The market on Foundry Iron is weaker, and we quote Northern brands of No. 2 at $16 to $16.50, Valley furnace. We note a sale of 900 tons to a local consumer at a price equal to about $16.25, Valley furnace. There is also some inquiry for Forge Iron, Northern brands being held at about $15.65, Valley furnace, or $16.50, Pittsburgh. Sales of Southern Forge Iron, amounting to about 2000 tons, have been made on the basis of $12, Birmingham.

Steel.—There is only a fair amount of inquiry, most consumers being covered by contract. We quote Bessemer Billets at $26, and Open Hearth $27, Pittsburgh. Sheet and Tin Bars are held at $28 for random lengths, with an advance of 50c. a ton for Cut Bars.

(*By Mail.*)

The Sharpsville Furnace Company has sold the Jones & Laughlin Steel Company between 20,000 and 25,000 tons of Bessemer Iron, for balance of the year delivery, at $17.25, at furnace. The blast furnace of this furnace company is being repaired and will start up about June 1, after an idleness of several years, and is expected to make about 150 tons a day. Some of the other large Steel concerns are feeling around for both Bessemer and Basic Iron, but there is very little to be had for delivery prior to July 1. Prices on Northern Foundry Iron are weak and lower, a local consumer having bought last week about 1000 tons of Northern No. 2, at about $16, Valley furnace. While the demand for Foundry Iron has been quiet, consumers are specifying freely on contracts. There is not much inquiry for Forge Iron and Northern brands could be bought without trouble at $15.65, Valley furnace, or $16.50, Pittsburgh. Bessemer Billets are being offered pretty freely by outside mills at $26, and Open Hearth, $27, Pittsburgh, and on a firm offer these prices might be slightly shaded. The supply of 4 x 4 inch Billets is larger than for some time. In Finished Iron and Steel a moderate amount of new business is being placed, but it is not nearly so heavy as some time ago. There is some complaint that specifications on contracts are not coming in as freely as the mills would like. Effective May

18, the American Sheet & Tin Plate Company advanced prices on Tin Plate 15 cents, or from $3.60 to $3.75 per base box. However, the leading Tin Plate mills have most of their product of this year sold ahead, at somewhat lower prices.

Ferromanganese.—Prices on prompt Ferro continue to decline, and while 80 per cent. foreign is being offered at $80, Pittsburgh, this price could probably be shaded on a firm offer. For extended delivery, foreign 80 per cent. Ferro is freely offered at $75, some tonnage having been placed at $70, Pittsburgh.

Muck Bar.—There is almost an entire absence of inquiry, and best grades of Muck Bar made from all Pig Iron are held nominally at $28, Pittsburgh.

Steel Rails.—Sales of Rails for this year's delivery made in the past week by the Carnegie Steel Company include 10,000 tons for the Norfolk & Western, 5500 tons for the Grand Trunk, to be used in the United States; 2100 tons for the Boise & Idaho and 2500 tons for the Los Angeles & Pacific. We quote Standard Sections at $28 at mill. We quote Light Rails as follows: 8-lb., $36; 10-lb., $32; 12-lb., $30; 16-lb., $29; 20-lb., $28.50; 25 to 45 lb., $27.50 to $28, maker's mill.

Rods.—For prompt delivery, Bessemer and Open Hearth Rods are held at $34.50 to $35, Pittsburgh.

Skelp.—The demand is very quiet and some of the mills are running short of work and are actively seeking new business. We quote: Grooved Steel Skelp, 1.57½c. to 1.60c.; Sheared Steel Skelp, 1.60c. to 1.65c.; Grooved Iron Skelp, 1.65c. to 1.70c.; Sheared Iron Skelp, 1.75c. to 1.80c., Pittsburgh, these prices being for ordinary widths and gauges.

Structural Material.—No large local contracts were placed during the week, and the amount of new business being given to the mills is smaller than for some time. No tonnage has yet been placed for San Francisco, and the amount of Steel that will be needed for new buildings to be erected in that city has been very much overestimated. It will likely be some time before any important tonnage comes up. The leading Structural concerns are filled up for the balance of this year. We quote: Beams and Channels, up to 15-inch, 1.70c.; over 15-inch, 1.80c.; Angles, 3 x 2 x ¼ inch thick up to 6 x 6 inches, 1.75c.; 8 x 8 and 7 x 3½ inches, 1.80c.; Zees, 3-inch and larger, 1.70c.; Tees, 3-inch and larger, 1.75c. Under the Steel Bar card Angles, Channels and Tees under 3-inch are 1.60c., base, for Bessemer and Open Hearth, subject to half extras on the Standard Steel Bar card.

Plates.—Deliveries on Sheared Plates can now be made by the mills inside of a week or ten days, but on Universal sizes shipments cannot be made inside of four to six weeks. A good deal of tonnage in Plates is being placed for trolley poles and other purposes for shipment to San Francisco. On narrow sizes of Plates prices continue to be shaded from $1 to $2 a ton. Official prices, which are occasionally shaded, are as follows: Tank Plates, ¼-inch thick, 3¼ up to 100 inches in width, 1.60c., base, at mills, Pittsburgh. Extras over the above prices are as follows:

	Extra per 100 pounds.
Gauges lighter than ¼-inch to and including 3-16-inch Plates on thin edge	$0.10
Gauges Nos. 7 and 8	.15
Gauge No. 9	.25
Plates over 100 to 110 inches	.05
Plates over 110 to 115 inches	.10
Plates over 115 to 120 inches	.15
Plates over 120 to 125 inches	.25
Plates over 125 to 130 inches	.50
Plates over 130 inches	1.00
All sketches (excepting straight taper Plates varying not more than 4 inches in width at ends, narrowest end being not less than 30 inches)	.10
Complete Circles	.20
Boiler and Flange Steel Plates	.10
"A. B. M. A." and ordinary Fire Box Steel Plates	.20
Still Bottom Steel	.30
Marine Steel	.40
Shell Grade of Steel is abandoned.	

TERMS.—Net cash 30 days. For anticipated payments a maximum discount may be allowed at the rate of 6 per cent. per annum and for a longer time than 30 days interest shall be charged at the same rate per annum. Invoices paid within ten days from date thereof, discount of ½ of 1 per cent. is allowable. Pacific Coast base, 1.60c., f.o.b. Pittsburgh, with all rail tariff rate of freight to destination added, no reduction for rectangular shapes 14 inches wide down to 6 inches of Tank, Ship or Bridge quality.

Sheets.—Prices on both Black and Galvanized Sheets are firmer than for some time, largely due to the high prices and scarcity of Sheet Bars. The outside mills are more closely adhering to official prices, and an advance in Sheets before long is anticipated to some extent. The mills have a heavy tonnage on their books and in some cases are six weeks to two months behind in deliveries. We quote: Black Sheets, Box Annealed, one pass through cold rolls, Nos. 10 to 12 gauge, 1.95c. to 2c.; Nos. 13 and 14, 2c. to 2.05c.; Nos. 15 and 16, 2.05c. to 2.10c.; Nos. 17 to 21, 2.10c. to 2.15c.; Nos. 22 to 24, 2.15c. to 2.20c.; Nos. 25 and 26, 2.20c. to 2.25c.; No. 27, 2.25c. to 2.30c.; No. 28, 2.35c. to 2.40c.; No. 29, 2.50c. to 2.55c., and No. 30, 2.60c to 2.65c. We quote Galvanized Sheets as follows: Nos. 10 and 11, 2.30c. to 2.35c.; Nos. 12 to 14, 2.40c. to 2.45c.; Nos. 15 and 16, 2.50c. to 2.55c.; Nos. 17 to 21, 2.65c. to 2.70c.; Nos. 22 to 24, 2.80c. to 2.85c.; Nos. 25 and 26, 3c. to 3.05c.; No. 27, 3.20c. to 3.25c.; No. 28, 3.40c. to 3.45c.; No. 29, 3.65c. to 3.70c., and No. 30, 3.90c. to 3.95c. We quote No. 28 Gauge Painted Roofing Sheets at $1.60 to $1.65 per square, and Galvanized Roofing Sheets, No. 28 Gauge, at $2.95 to $3 per square for 2-inch corrugations. These prices are for carload lots, jobbers charging the usual advances for small lots from store.

Bars.—There is only a fair demand for Iron and Steel Bars, but specifications on contracts are being received in fairly satisfactory volume by the mills. We quote Iron and Steel Bars at 1.50c., base, half extras, for carloads and larger lots, f.o.b. Pittsburgh.

Hoops and Bands.—The four concerns that roll Hoops and Bands are full of work, specifications on contracts coming forward quite freely, while a fair amount of new business is being placed at present prices. We quote Steel Hoops at 1.90c., and Bands for all purposes at 1.50c., base, half extras, as per Standard Steel card. These prices are for carload lots, f.o.b. Pittsburgh, plus full tariff rail rate to point of delivery, an advance of $2 a ton being charged for less than carloads.

Cotton Ties.—All of the tonnage for this year has been ordered and the mills are now filling contracts placed some time ago, at the official price of 85c. per bundle.

Tin Plate.—As foreshadowed in this report last week, the American Sheet & Tin Plate Company has advanced prices of Tin Plate 15c. a box, effective May 18, or from $3.60 to $3.75 per base box. This action was generally expected by the trade, as higher prices on Tin Plate were imperative, owing to the greatly increased cost of Tin and Tin Bars. However, a great deal of business was previously booked by the mills, at prices ranging from $3.25 to $3.55 per box and for delivery up to October or later. We quote Tin Plate at $3.75 per base box, f.o.b. Pittsburgh, for 14 x 20 100-lb. Cokes, terms 30 days, less 2 per cent. off for cash in ten days, on which price a rebate of 5c. a box is allowed for carloads and larger lots.

Merchant Steel.—A large tonnage for special Shapes has been placed by the agricultural implement makers, but specifications on these contracts are not coming in very freely. In fact, the amount of new work being placed is rather light, but the mills have a good deal on their books. Prices are unchanged, as follows: Planished or Smooth Finished Tire Steel, 1.70c.; Iron Finish up to 1½ x ½ inch, 1.65c., and Iron Finish, 1½ x ½ inch and larger, 1.50c., base, Pittsburgh, and Channels for solid rubber tire are quoted as follows: ¾, ⅞ and 1 inch, 2c., and 1⅛-inch and larger, 1.90c.; Toe Calk Steel, 2c. to 2.05c.; Railway Spring Steel, 1.75c. to 1.80c.; Cutter Shoes, 2.20c. to 2.25c.; Flat Sleigh Shoe, 1.50c. to 1.55c.; Crucible Tool Steel, 6c. to 8c. for ordinary grades and 12c. and upward for special grades. We quote Cold Rolled Shafting at 50 per cent. discount in carloads and 45 per cent. in less than carloads, delivered in base territory.

Railroad Spikes.—The demand continues unusually heavy and the three concerns in the Pittsburgh district that are making Railroad Spikes are very busy. Prices are firm and we quote standard sizes at $2 to $2.05 per 100 lbs., f.o.b. Pittsburgh, the lower price being absolute minimum of the market.

Spelter.—The demand is very light and prices have shown a decline. We quote prime grades of Western at 5.80c., St. Louis, equal to 5.92½c., Pittsburgh.

Merchant Pipe.—The National Tube Company is now prepared to supply Black Wrought Pipe, Merchant, Card and extra strong weights, plain ends or threaded, in sizes from 1 inch to 3 inches in diameter and in lengths up to 40 feet. A large tonnage in Merchant sizes of Pipe is being shipped to San Francisco to replace broken water and gas mains in that city. The general demand continues heavy, and leading Pipe mills are filled up for the next two or three months, while shipments are unusually heavy. A number of large gas and oil lines are being figured on, but are not far enough along as yet to make reference to them. On the larger sizes of Line Pipe the mills are pretty well filled for the balance of this year. Prices continue low, the extreme discount on Merchant sizes of Steel Pipe remaining at 81 and 5 per cent. off, this price being made only to the very large trade. Official discounts in carload lots, which are shaded about one point, are as follows:

Merchant Pipe.

	Jobbers, carloads. Steel. Black.	Steel. Galv.	Iron. Black.	Iron. Galv.
	%	%	%	%
⅛ and ¼ inch	72	56	60	53
⅜ inch	74	60	71	57
½ inch	76	64	73	61
⅝ to 6 inches	80	70	77½	67½
7 to 12 inches	75	60	72½	57
Extra strong, plain ends:				
⅛ to ¾ inch	65	53	62	50
½ to 4 inches	72	60	69	57
4½ to 8 inches	68	56	65	53
Double extra strong, plain ends:				
½ to 8 inches	61	50	58	47

Boiler Tubes.—On account of the low prices ruling on Merchant Tubes there has been a perceptible increase in tonnage, consumers desiring to accumulate as large stocks as possible while prices are low. The demand for Locomotive Tubes is also very heavy and prices are firm. Discounts quoted below are shaded about four points, or $8 a ton, on Merchant Tubes, but on Locomotive Tubes are being firmly held. We quote:

Boiler Tubes.

	Iron.	Steel.
1 to 1½ inches	41	46
1¾ to 2¼ inches	41	58
2½ inches	46	60
2¾ to 5 inches	53	66
6 to 13 inches	41	58

Iron and Steel Scrap.—The demand continues rather quiet and is mainly for small lots. It is not expected that trade will show much betterment for some little time, as the period is approaching when the mills run at a slacker pace, on account of the hot weather, and in addition many plants will close the latter part of June for repairs and inventory. Large consumers are pretty well covered for some time ahead. Dealers quote as follows: Heavy Melting Scrap, $14.50; Bundled Sheet Scrap, $13.75 to $14; Machinery Cast Scrap, $15; No. 1 Wrought Scrap, $16.50 to $16.75; Old Steel Rails, $15; Old Steel Rails, long pieces for rerolling, $15.50; Old Car Wheels, $17.25 to $17.50; Stove Plate, $11 to $11.25; Old Iron Axles, $24 to $24.50; Old Steel Axles, $20 to $20.50; Axle Turnings, $13.50 to $13.75; Cast Iron Borings, $8; Wrought Turnings, $12, all in gross tons, f.o.b. Pittsburgh. We note sales of 200 tons of No. 2 Busheling Scrap at $11.85, 1000 tons No. 1 Busheling Scrap at $13.85, 500 tons Machine Shop Turnings at $11.65, 750 tons of Heavy Melting Stock at $14.50, 500 tons of Bundled Sheet Scrap at $13.75 and 300 tons of Cast Borings at $8.35, all f.o.b. cars, Pittsburgh.

Coke.—The demand for either Furnace or Foundry Coke is not very urgent and consumers are trying to beat down prices. Most of the furnace interests are covered with Coke by contracts for second half and the existing demand is mostly for prompt shipment. We quote strictly Connellsville Furnace Coke at $2.35 to $2.45, and 72-hour Connellsville Foundry Coke at $2.65 to $2.75 a ton, at oven. Main Line brands of Furnace Coke that run higher in sulphur and ash than Connellsville are offered as low as $2 or less, and Foundry at $2.35 to $2.50 a ton, at oven. The output of Coke continues heavy, the Upper and Lower Connellsville regions having made last week 375,422 tons.

The Monarch Coke & Coal Company, Uniontown, Pa., has opened a sales office on the twelfth floor of the Frick Building Annex, Pittsburgh, Pa., with H. J. Lyons manager of sales.

Philadelphia.

REAL ESTATE TRUST BUILDING, May 22, 1906.

Business in Iron and Steel has been a little quiet in some departments, although the general average has not been bad. The Pig Iron situation gives tone to the market, however, and as long as that continues satisfactory it is reasonably safe to assume that consumption is not falling off to any great extent. New orders for Finished Steel have been rather slow, and there is a little anxiety in regard to what may come forward during the next three or four weeks, as the tonnage on the books is considerably less than for several months past. Reports from most of the manufacturing districts are highly satisfactory and all appearances indicate continued activity, but it requires new orders to promote confidence and stiffen prices. The Bar trade is particularly dull, Scrap is neglected and weak, and in some other departments there is a feeling of indifference which leads to some doubt in regard to the volume of business during the remainder of the year. Requirements for the Pacific Coast should even things up pretty fairly. It cannot be supposed that losses in that great disaster will benefit any one, although it will necessarily cause some new demand, and in a measure offset shrinkages in other directions. There is very little use in theorizing, however, as no human foresight can foretell what developments may be made during the remainder of the year. The situation is unusually complicated, and the outcome can only be judged by such developments as may be presented from time to time. Regarded from the immediate viewpoint, there is little or no change from last week. In many lines, most lines in fact, reports are favorable. There is no scarcity of business, and for a month or six weeks there is plenty to go on with. For later dates, however, there is more or less reluctance in regard to entering into new engagements, and for that reason the feeling is uncertain and wavering. How much of this is due to the financial situation is not clear, but the exposure of graft and favoritism in high places has had a depressing influence, and when in addition to this there is a constant demand for new money it is not surprising that confidence is less strong than it was some time ago. In plain terms it may be said that if money in large volume is not forthcoming there will be danger of a good deal of important work being hung up. The entire situation, therefore, seems to depend upon money, and money to a considerable extent will depend upon the crops, which so far are said to promise at least a full average, if not more than that.

Pig Iron.—There need be no hesitation in declaring that Pig Iron is firm, and nothing appears in the outlook to indicate that it will not continue so until midsummer at least, perhaps for a longer period. The demand and supply are so evenly balanced that there has been no opportunity for moving prices in either direction, and until something happens to change the proportions consumers can neither force a decline nor producers secure an advance. The fact that stocks are at almost the lowest point ever known (considering the large current production) gives sellers complete control of the market, and until more Iron is made or less Iron is wanted prices cannot get far from their present level. There are some evidences of a willingness to make fractional concessions on the right kind of business for the third and fourth quarter's deliveries, but it is due more to a desire to hold trade than to any distinct expectation that prices are likely to be lower. Naturally there should be a larger production during the last half of the year, but ores are dear and furnace owners claim that they cannot make Pig Iron at much lower figures, notwithstanding lower prices for fuel. Of course, the law of supply and demand will be the controlling influence in the long run, but for the present it is decidedly uncertain which of these will dominate during the later months of the year. Buying, therefore, while amply sufficient to take care of the June and July output, is not large enough to take up any important tonnage for the last half of the year. Some material has been engaged, but not to the extent that it was a year ago, which probably reflects the attitude of many large buyers. As the outlook unfolds, advantage will be taken of what may appear to be the safest course to pursue, buying from hand to mouth in case of unsatisfactory prospects, or for several months ahead in case conditions become more favorable. Sales during the week have been large enough to keep furnaces on the run to make deliveries, but, as already stated, purchases for the later months have not been of much significance. Basic Iron is strong and makers claim that $17.75 would be an inside price for any delivery, but there is no great demand, although one 5000-ton lot will probably be closed to-day, at about the figure named. Foundry Irons sell freely and while a little more than $18.75 has been paid for some lots others have been secured at $18.50, the average being, as stated, about $18.75. There is a good demand for Gray Forge and No. 3 and No. 4 Foundry, but $16.25 to $16.50 is about all that they will bring in the open market. Extra mill Irons, however, command $16.75, and in some cases a little better than that. The general range for Philadelphia and nearby deliveries would be about as follows:

No. 1 X Foundry	$19.25 to $19.50
No. 2 X Foundry	18.50 to 18.85
No. 2 Plain	18.25 to 18.50
Standard Gray Forge	16.50 to 16.75
Ordinary Gray Forge	16.00 to 16.25
Basic	17.60 to 17.75
Low Phosphorus	24.50 to 25.00
Malleable	19.25 to 19.50
Bessemer	20.00 to 20.25
Lake Superior Charcoal	21.00 to 21.50

Steel.—There is a fairly good demand for Steel, but prices are about a dollar per ton lower, namely, $28 to $28.50 for Ordinary Billets and $31 to $33 for Forging Billets. Mills have plenty of work, but it was considered advisable to reduce prices to meet those made by the Western mills.

Steel Alloys.—The demand is very light, and with prospects of larger supplies in the near future it is difficult to say what the exact prices would be. Ferromanganese for the last half of the year could be had for something less than $80, and for June or July $90 to $95. Spiegel is offered to arrive at about $32.50 on dock, but there is very little demand for it.

Plates.—Business is not as brisk as it might be, and deliveries can be made with greater promptness than for months past. There is a good deal of work to be specified for, however, so that the mills are in a fairly satisfactory condition. Prices are steady and unchanged, as follows:

	Carload. Cents.	Part carload. Cents.
Tank, Bridge and Boat Steel	1.73½	1.78½
Flange or Boiler Steel	1.83½	1.88½
Marine	2.13½	2.18½
Locomotive Fire Box Steel	2.23½	2.28½

The above are base prices for ¼-inch and heavier. The following extras apply:

	Extra per 100 pounds
3-16-inch thick	$0.10
Nos. 7 and 8, B. W. G.	.15
No. 9, B. W. G.	.25
Plates over 100 to 110 inches	.05
Plates over 110 to 115 inches	.10
Plates over 115 to 120 inches	.15
Plates over 120 to 125 inches	.25
Plates over 125 to 130 inches	.50
Plates over 130 inches	1.00

Structural Material.—In this department there seems to be enough business to satisfy everybody. Besides the large contracts for bridge and architectural purposes there is a good deal of miscellaneous work, so that both large and

small orders are being entered, making a tonnage equal to full capacity. Prospects are very favorable and prices steady and unchanged, as follows: Beams, Channels and Angles, 1.83½c. to 2c., delivered.

Bars.—The Bar trade is disappointing. A few leading mills are running full, largely on specialties, while the majority are doing little more than single turn. Specifications are still very fair, but order books are thinning out, and new business would be very acceptable, but for the present there is not much prospect of important additions. This applies to both Iron and Steel, on which quotations remain at 1.63½c. to 1.68½c. for deliveries in this district.

Sheets.—Business is not satisfactory, although in a desultory way the weekly output shows a fair average tonnage. Prices are unchanged, as follows: Nos. 18 to 20, 2.40c.; Nos. 22 to 24, 2.50c.; Nos. 25 and 26, 2.60c.; No. 27, 2.70c., and No. 28, 2.80c.

Old Material.—The market is as dull as it has been at any time for months. Mills seem to have withdrawn from the market, and it is hard to get bids at figures that are at all satisfactory to holders. Buyers say they have all the material they are likely to need for weeks to come, and in view of the unsatisfactory demand for finished products they are not disposed to anticipate their requirements. The following quotations of bids and offers for deliveries in buyers' yards are fairly representative figures:

Scrap Steel Rails and Crops	$16.25 to $16.50
No. 1 Steel Scrap	16.00 to 16.25
Low Phosphorus Scrap	20.50 to 21.00
Old Steel Axles	19.50 to 20.00
Old Iron Axles	25.50 to 26.00
Old Iron Rails	21.00 to 21.50
Old Car Wheels	17.00 to 17.50
Choice Scrap, R. R., No. 1 Wrought	18.75 to 19.25
Choice No. 1 Yard Scrap	17.00 to 18.00
Long and Short	16.00 to 16.50
Machinery Scrap	15.50 to 16.00
Wrought Iron Pipe	14.00 to 14.50
No. 1 Forge Fire Scrap	14.50 to 15.00
No. 2 Light Ordinary	10.00 to 11.00
Wrought Turnings	12.75 to 13.25
Axle Turnings, Choice Heavy	13.50 to 14.00
Stove Plate	11.50 to 12.00
Cast Borings	9.50 to 10.00

Cincinnati.

FIFTH AND MAIN STS., May 23, 1906.—(*By Telegraph.*)

Pig Iron.—Conditions have undergone no material change from what they were a week since, excepting that inquiries are possibly coming forward in a more satisfactory manner, showing that there is more interest taken in the situation as the month advances. Most of the melters are continuing the waiting tactics that have been pursued for several weeks, evidently being fully satisfied that they have sufficient Iron in yards to carry them well into July, and when this period approaches it will be ample time to buy for the last half. The month of May generally exerts a peculiar influence on all Iron and kindred industries, owing to the labor troubles that are usually projected during this month, and while we are optimistic enough to believe that the present year has shown some improvement in this particular, there can be no doubt that the strike of the longshoremen, the troubles in the coal trade and the friction among the molders have had more or less influence on the situation. There has been quite a little buying of Malleable, with Basic holding strong. Local foundries are said to be well fixed for several weeks ahead, but delayed somewhat by labor troubles. We are told that one of the large agricultural concerns, said to have been in the market last week for considerable tonnage, has withdrawn for the present. The largest inquiry reported is for 12,000 tons and comes from a Central Ohio pipe shop; one of the Valley rolling mills wants 1000 tons of gray forge and a large car building concern 5000 tons, all for last half. Freight rates from the Hanging Rock district are $1.15 and from Birmingham $3. We quote, f.o.b. Cincinnati, as follows:

Southern Coke, No. 1	$17.25 to $17.50
Southern Coke, No. 2	16.75 to 17.00
Southern Coke, No. 3	16.25 to 16.50
Southern Coke, No. 4	15.75 to 16.00
Southern Coke, No. 1 Soft	17.25 to 17.50
Southern Coke, No. 2 Soft	16.75 to 17.00
Southern Coke, Gray Forge	15.00 to 15.25
Southern Coke, Mottled	14.50 to 14.75
Ohio Silvery, No. 1 (8 per cent. Silicon)	21.65 to 22.15
Lake Superior Coke, No. 1	17.65 to 18.15
Lake Superior Coke, No. 2	17.15 to 17.65
Lake Superior Coke, No. 3	16.65 to 17.15
Car Wheel Irons.	
Standard Southern Car Wheel	$23.50 to $24.00
Lake Superior Car Wheel	22.00 to 22.50

Coke.—The market is rather quiet, and shipments coming forward with regularity. We quote the best brands of Connellsville and Virginia Foundry, $2.75 to $3, f.o.b. ovens.

Finished Iron and Steel.—Structural people in this immediate territory complain of a slight falling off in new contracts, with deliveries in better condition. We quote, f.o.b. Cincinnati, as follows: Iron Bars, in carload lots, 1.63c., with half extras; the same, in smaller lots, 2c., with full extras; Steel Bars, in carload lots, 1.63c., with half extras; the same, in small lots, 1.85c., with full extras; Base Angles, 1.83c., in carload lots; Beams and Channels, in carload lots, 1.83c.; Plates, ¼-inch and heavier, 1.73c., in carload lots; in smaller lots, 1.90c.; Sheets, 16 gauge, in carload lots, 2.15c.; in smaller lots, 2.70c.; 14 gauge, in carload lots, 2.05c.; in small lots, 2.60c.; Steel Tire, 1 x ¼ inch or heavier, 1.83c., in carload lots.

Old Material.—There has been a fair demand, and considerable tonnage has been sold. With a prospective scarcity of Billets a stronger Scrap condition is predicted. We quote dealers' prices, f.o.b. Cincinnati, as follows: No. 1 Railroad Wrought Scrap, $15 to $15.50 per net ton; Cast Borings, $5 to $6 per net ton; Steel Turnings, $8 to $9 per net ton; No. 1 Cast Scrap, $12 to $13 per net ton; Iron Rails, $21 to $22 per gross ton; Steel Rails, rolling mill lengths, $15 to $16 per gross ton; Relaying Rails, 56 lbs., and upward, $28 to $29 per gross ton; Iron Axles, $22 to $23 per net ton; Car Wheels, $17.50 to $18.50 per gross ton; Low Phosphorus Scrap, $18 to $19 per gross ton.

Claude C. Hayward, who for several years was with the Tennessee Coal, Iron & Railroad Company as traveling salesman, has connected himself with the Pig Iron firm of Walter Wallingford & Co. in the same capacity.

Hickman, Williams & Co. have secured the agency for the Chattanooga Furnace Company in this territory.

Cleveland.

CLEVELAND, OHIO, May 22, 1906.

Iron Ore.—The movement of Iron Ore down the lakes has been resumed, with prospects that there will be no further interruptions for the summer. The dock managers' agreement last week with the longshoremen was followed by an agreement between the officers of the Great Lakes Towing Company and its men. The acceptance by the firemen on board ship of the offer by the Lake Carriers' Association of a renewal of the 1905 scale is being voted on by the various locals. It is generally believed that the men will acept the terms. The congestion of Ore boats at Lake Erie docks was quickly relieved by the action of the docks in running double shift. The accumulation was cleaned up in less than a week. Since the boats could not get Coal at Lake Erie docks they ran light to the head of the lakes, reproducing there the congestion at Lake Erie ports immediately after the strike. This promises to limit the amount of Ore handled in May and to throw a greater burden on the remaining months of the season. However, it depends largely upon Pig Iron developments whether the shipments of Ore this year will be as large as has been anticipated. Freights remain unchanged, both on contract and wild tonnage, at 75c. from the head of the lakes, 70c. from Marquette and 60c. from Escanaba to Lake Erie ports. The dispatch at lower lake ports is admirable and the car supply seems abundant. The Lake Shore and the Pennsylvania railroads are just beginning extensive improvements at their docks at Ashtabula. These are expected to provide for the probable needs of those ports for the next 15 years. The Wheeling & Lake Erie is rebuilding its docks at Huron. The old Short Line Railway has been sold to the Norfolk & Western, which announces some big changes in dock facilities at Sandusky. The city there is improving the harbor. The straight channel into Toledo has been finished and the prospects are for a greater movement through that port this year. Unloading facilities have been so enormously increased that there is hardly any danger of any immediate congestion of boats at Lake Erie ports if the car supply is sufficient.

Pig Iron.—The demand for Foundry Iron for third quarter delivery is good all through this territory, but especially to the east of Cleveland. Northern Ohio buyers are reported to be holding back a little in some quarters. Some of the larger consumers have been holding off in anticipation of getting Iron at $16 at furnace, while others have recently come into the market to cover their needs at $16.25 for No. 2 in the valleys. It is realized, however, that buyers are not reaching beyond the third quarter, although a few have covered for the second half. The Basic market is fairly active at $17 in the valleys, and higher prices are predicted in some quarters if the movement continues for another month as it has in the past three weeks. Bessemer is strong at $17.25 to $17.50 in the valleys. On Coke the present expectation is that prices will run off in the near future, as the supply showns signs of increasing. The best grade of 72-hour Foundry Coke are selling at $3 at the oven, and Furnace Coke at $2.25 to $2.50 at the oven.

Finished Iron and Steel.—The demand for Sheet Bars has shown no abatement during the week and the supply has not increased. The shortage has materially reduced the output of Sheets, and mills are getting further behind with their orders. Mills generally have at least six weeks' orders and some are reported 12 weeks or more behind. This has brought about the prediction that prices will advance before July 1, but strong objections are raised in some quarters to higher prices in the present delicate state of the market.

The demand apparently warrants the rise, but policy may dictate otherwise. Prices of Sheets have not changed out of stock, but the stocks are badly broken, owing to difficulty in getting deliveries. Prices hold at 2.15c. for No. 10 Black, out of stock; 2.70c. for No. 28, one pass cold rolled, and 3.70c. for No. 28 Galvanized. Billets are extremely scarce and prices vary widely. Some quotations have ranged as high as $36, Pittsburgh, while other mills are able to make deliveries at less prices. In Steel Bars the mills are comfortable, owing to the heavy purchases of the agricultural implement concerns. The price holds steady, at 1.50c., Pittsburgh, for both Bessemer and Open Hearth. New orders are reported in Structural Steel, with better specifications against old contracts. The same is true of Plates. Both markets are strong. The only local buying reported in the Rail trade is for traction lines.

Old Material.—The market for about a week has shown very little buying, with some tendency toward lower prices. The following are dealers' quotations to the trade, all gross tons, f.o.b. Cleveland: Old Steel Rails, $14.50 to $15.50; Old Iron Rails (nominal), $22 to $23; Iron Car Axles (nominal), $18.50 to $19.50; Heavy Melting Steel, $14.50 to $15. Net tons: Cast Borings, $8.50 to $9; No. 1 Busheling, $12.50 to $13; No. 1 Railroad Wrought, $15 to $16; No. 1 Cast, $13.50 to $14.50; Iron and Steel Turnings and Drillings, $9.50 to $10.50.

The German Iron Market.

BERLIN, May 10, 1906.

The improvement in the German Iron market has gone forward the past fortnight at a more rapid pace than at any time during the current year. These two weeks have been characterized by numerous advances of prices, whereas so recently as a month ago it was hardly expected that there would be any further important advances during the rest of the year. Last week the Steel Verband made an immediate advance of 5 marks per ton on Beams and half rolled Steel products. This probably includes all Structural forms. While the new prices take effect at once on all new orders, they will hardly be felt in the trade generally before the fourth quarter of the year, inasmuch as the production of the mills is already pretty well sold till the end of the September quarter.

The movement for higher prices was started by the action of the Coal Syndicate in abolishing the export drawback on Coal used in producing Iron and Steel for export, as detailed in my last letter. Following close upon that news came the announcement that the Pig Iron Syndicate had also decided to discontinue paying a drawback on exported goods. The effect of the withdrawal of the two bounties, which is to go into operation at the beginning of July, is estimated by the Wire mills at 10 marks a ton on exported Wire. It was chiefly this cessation of the bounties that induced the Steel Verband to mark up prices as mentioned above. The advance, as the Verband explained, was intended to make up for the withdrawal of those bounties. An extraordinary demand for goods for export, it was unofficially stated, gave occasion for increasing prices. Although Bars and Sheets were not included in the advances officially adopted by the Verband, the producers of these goods have marked up their prices to correspond. Soft Steel Bars are now sold at 125 marks, and in some cases higher, while the new prices for Sheets range between 138 and 140 marks. Probably export orders are taken at somewhat lower figures.

The Wire mills also took prompt action to make up for the loss of the drawback by advancing the price of Rolled Wire from 132.50 to 138 marks. Many of the mills insisted upon an advance to 140 marks. These mills would have been very hard hit by the cessation and reduction of the bounties, since a number of them sell above two-thirds of their product abroad. Some time ago the Steel Verband reduced the drawback on half finished goods, including Wire stock, from 15 to 10 marks per ton for the second quarter of the year, with a further reduction to 5 marks for the third quarter. The total loss to the Wire mills, including 2 marks a ton for the Coal used in the process of rolling, will therefore be 12 marks after July 1.

Drawbacks Not Needed for Forcing Exports.

The partial discontinuance of the policy of giving drawbacks on exported goods marks an important event in the German Iron trade, since this system has been greatly relied upon in the past few years for pushing the export trade. The Coal Syndicate has been paying about 3,000,000 marks a year in drawbacks on Coal used in turning out Iron and Steel products for export, and the great Steel Verband has been paying a much larger sum on half finished goods consumed in manufacturing for export. An Essen newspaper, which has intimate relations with the Coal and Iron industries, estimates that the total bounties hitherto paid on exported Iron and Steel goods have amounted to fully 10,000,000 marks. That the drawbacks have been so largely wiped out at this particular moment is a significant fact, since this action expresses the double conviction of Coal and Iron men that the situation in the world's markets is now so favorable that the drawbacks are not needed for forcing exports; and that the demand for goods at home is so active as to guarantee full work for mines and mills, without their having to resort to any artificial stimulus for the export trade.

The above paragraphs do not exhaust the chapter of price advances. At the beginning of the month the Pig Iron Syndicate marked up Hematite and Foundry Iron 2 marks at North German points. A great sensation had been created in March when a reduction of prices at the points in question was announced as a measure for meeting English competition. Since the Verband marked up prices various associations of dealers have issued new lists, with proportionately higher prices. Further advances are also expected on Plates and Sheets at the mills.

A Bright Outlook.

As for the condition of the trade, little needs to be added to what was written in previous letters. The conditions there detailed have continued, only with increased intensity. The scarcity of Pig Iron remains, and has grown more marked. The product of the furnaces goes immediately into consumption; nowhere, apparently, are any stocks on hand. In half rolled Steel materials, too, there are complaints of inadequate delivery of goods ordered. The latest report from the Düsseldorf Exchange reflects intense activity in Iron and Steel.

The stock market continues to take an optimistic view of the position of the Iron trade. During the past few weeks, when the general security market has been under the influence of the unfavorable international money situation and transactions have been much restricted, Iron shares have not only resisted the adverse tendencies but have actually risen in the face of them. The brightness of the outlook in the United States, together with the prospect that the American industry will have its hands full in supplying San Francisco with Structural Material, has encouraged stock operators here to take a very cheerful view of the prospects of the German Iron trade.

Much speculation is still indulged in as to whether the German mills will get any considerable volume of orders from California. Ten days ago it was reported from the West German Iron district that American Iron works, presumably the Steel Corporation, had made a proposition to the German manufacturers looking toward their co-operation in supplying San Francisco, but it has not been made known whether any actual agreement was reached. On the other hand, the leading newspaper of Essen has stated that the works in that region have received many cable inquiries respecting prices and periods when they can fill orders. The paper delares that a large business is expected to result from these inquiries.

Foreign demands are also appearing in other quarters. The governments of Brazil, Argentina and Chile are in the market with large orders for materials for the construction of war vessels. A number of foreign street railways have recently sent in good orders for Rails and cars, and South Africa has ordered 7000 tons of Wire Rope for bridge building. The general prospects of the export trade are regarded as very bright.

Work in the electrical industry continues to open up good prospects for the Iron trade. The city of Hamburg has just placed a $10,000,000 contract for electric street and suburban railways. The German Oversea Electrical Company of Berlin, which was organized eight years ago to acquire, build and operate street railways in Argentina and Chile, is about to double its capital to $9,000,000, in order to acquire the street railways of Montevideo. One of the interurban lines in the Essen region, now under construction, cannot be completed this year because the Steel mills cannot deliver the Rails, so great is their business in home and foreign orders.

The demand for Coal is so heavy that it cannot be supplied as fast as called for. The syndicate has refused for several weeks to take any more new orders, whatever the prices offered. A number of home industrial establishments have been hindered in their business for lack of Coal. The syndicate is unable to fill its contracts, and recently it has authorized the Hamburg-American Line to buy bunker Coal in England upon its account. Other customers at North Sea ports have had to do the same. The inability of the syndicate to fill all home orders is partly due to the fact that it engaged, several months ago, to make large shipments to France.

The extension of the Essen Coal district toward the north, as mentioned in my last letter, has caused lively competition for the Coal properties newly discovered in that direction. When the great Rheinisch-Westfälische Bergwerks-Gesellschaft was organized last year to acquire a large part of the new deposits it paid for its property at the rate of 140,000 marks per mining claim. Recent purchases in the new region, however, have ranged between 300,000 and 400,000 marks per claim.

Much interest attaches to the visit of the American Institute of Mining Engineers to Düsseldorf and the adjacent Coal and Iron district in August. At a recent meeting of the Verein Deutscher Eisenhüttenleute at Düsseldorf the visit was discussed and some points in the programme of visits and entertainments were mentioned.

New York.

NEW YORK, May 23, 1906.

Pig Iron.—Between 4000 and 5000 tons of Pig Iron has been bought in the local market in the week, the principal business closed being for a large pump company, the shipments to be made to works in Buffalo and New England. The contract amounts to about 2000 tons, largely taken by furnaces on the lakes. In Low Phosphorus Iron sales amounting to about 1000 tons are reported to Eastern Steel foundries. Sales of 1000 tons of Foundry grades have been made for deliveries around Newark, N. J. Buyers are pretty well covered for the next six weeks and show no anxiety to contract for the third quarter. It is understood that business in Basic amounting to 10,000 to 15,000 tons, referred to last week, has not been closed. The market for Basic Iron stands at about $17.50, delivered in eastern Pennsylvania. Prices on Foundry Iron for New England delivery are a trifle easier, as indicated by recent competition. We quote No. 1 Foundry at $18.50 to $19; No. 2 Foundry, $18 to $18.50; No. 2 Plain, $17.50 to $18; Southern No. 1 Foundry, $18.25 to $18.50; Southern No. 2 Foundry, $17.25 to $17.50.

Steel Rails.—Following several weeks of activity in the Rail business for 1907, the past week has been very quiet. A sale of 2200 tons for 1906 to the Toledo, Peoria & Western and one of 10,000 tons to the Norfolk & Western are reported, and there have been scattered sales amounting to 4000 to 5000 tons. Negotiations for 1907 are still going on, and further contracts will be closed in the near future. The Tennessee Coal, Iron & Railroad Company is sold up to July 1, 1907. Among recent business taken by this company is a round tonnage for 1907 for the Southern Pacific.

Structural Steel.—Two important New York contracts that have been pending for some time are expected to be let in the near future, one of them possibly this week—namely, the 28,000 tons of Steel that will be required for the above ground construction of the Hudson Company terminal at Cortlandt and Church streets. There will be two buildings, as Dey street bisects the property acquired by the company for its terminal. The entire Church street frontage of the two blocks between Cortlandt and Fulton streets will be occupied. The buildings will be 20 stories. The general contract for the superstructure is understood to have gone to the George A. Fuller Company. The other large contract referred to is that which the City Contracting Company will make for the Steel for its new building on Cortlandt street, with a frontage on Broadway to the south of the Benedict Building, which stands on the corner of Broadway and Cortlandt street. About 12,000 tons of Steel will be used. The uptown terminal of the Hudson Company, at Sixth avenue and Thirty-second and Thirty-third streets, will require a large amount of Steel, but this is work for the more distant future. All that has been done so far is to acquire real estate. The Church and Cortlandt streets terminal will be ready for Steel in five or six months. Bridge work is generally quiet. The American Bridge Company has taken 600 tons of highway bridges in Philadelphia, and 500 tons of Chicago & Northwestern elevated track work in Chicago. The Erie Railroad is figuring on two large viaducts, requiring altogether about 7000 tons. One will cross the Genesee River. The Baltimore Bridge Company received the contract for the new Steel pier of the Baltimore & Ohio Railroad at Locust Point, Md., representing about 2000 tons of Steel. The Structural mills report specifications coming in well, but new business recently has not been up to the volume of shipments, and there is perhaps a little more effort to get business. However, deliveries are not such as to encourage buyers to rush into the market. We quote as follows on mill shipments for tidewater deliveries: Beams, Channels, Angles and Zees, 1.84½c.; Tees, 1.89½c.; Bulb Angles and Deck Beams, 1.99½c. Beams, 18 to 24 inch, 0.10c. extra; Angles over 6 inches, 0.10c. extra. Out of stock Beams and Channels are sold at 2.50c. to 2.75c.

Bars.—It is possible that more sales of Bar Iron have been made for export than for domestic purposes the past week in this market. Buyers for home consumption are doing exceedingly little and there appear to be no inquiries for future delivery. It is likely that consumers are withholding orders in the hope that prices may be lower, but the Eastern manufacturers at their meeting in this city last week reaffirmed prices. It is claimed by leading makers that the basis of 1.50c., Pittsburgh, for Bar Iron is as low as they can go with cost of production at its present level. Prices of both Iron and Steel Bars are quoted at 1.64½c. to 1.69½c., tidewater, according to deliveries and specifications.

Plates.—Local business is exceedingly quiet. The contract for riveted pipe for the Brooklyn water works extension is to be awarded to-day and the trade is on the *qui vive* for the name of the successful bidder, as upon the placing of this contract will depend the closing of the purchase of about 10,000 tons of half-inch Plates. Prices are held firmly. Quotations are as follows at tidewater: Sheared Tank Plates, 1.74½c. to 1.84½c.; Flange Plates, 1.84½c. to 1.94½c.; Marine Plates, 2.14½c. to 2.24½c.; Fire Box Plates, 2.24½c. to 2.60c., according to specifications.

Cast Iron Pipe.—Trade is as active as ever. Manufacturers are obliged to turn down frequent inquiries on account of their inability to meet terms as to time of delivery. Bids will be opened to-day by the Department of Water Supply and Electricity on about 1500 tons of Pipe for Brooklyn. Carload lots of 6-inch are firmly held at $30.50 per ton, at tidewater.

Old Material.—Very good sales have been made of Cast Scrap, some of which call for deliveries extending over the next three months. On these sales full prices have been secured, as the market is quite bare of this class of material. Car Wheels, Cast Borings, Wrought Turnings, Wrought Pipe and Light Iron are strong and in good demand. Relaying Rails are very active, and much greater quantities could be sold if supplies of the sections desired could be had. Choice grades of Scrap, such as Iron and Steel Axles and Old Iron Rails, are in fair demand, with prices well held. Wrought Scrap, however, is weaker, as there appears to be an accumulation of this class of material, and rolling mills are not disposed to make purchases for extended deliveries. This is attributed to some extent to the approach of the time for the annual settlement of the mill wage scale. The movement of Steel Scrap is checked to some extent by embargoes on shipments to some of the leading Eastern Steel works. Approximate prices, per gross ton, for New York and vicinity are as follows:

Old Iron Rails	$20.50 to $21.50
Relaying Rails	25.50 to 26.00
Old Steel Rails, rerolling lengths	16.50 to 17.50
Old Steel Rails, short pieces	15.50 to 16.00
Heavy Melting Steel Scrap	15.50 to 16.00
Standard Hammered Iron Car Axles	25.50 to 26.50
Old Steel Car Axles	20.00 to 21.00
No. 1 Railroad Wrought	18.50 to 19.50
Iron Track Scrap	16.00 to 17.00
No. 1 Yard Wrought, long	17.00 to 18.00
No. 1 Yard Wrought, short	15.00 to 16.00
Wrought Pipe	14.00 to 14.50
Light Iron	10.00 to 10.50
Cast Borings	9.00 to 9.50
Wrought Turnings	12.50 to 13.50
Old Car Wheels	17.00 to 18.00
No. 1 Machinery Cast	15.50 to 16.00
Stove Plate	11.50 to 12.00
Grate Bars	10.50 to 11.00
Malleable Cast	16.50 to 17.50

Metal Market.

NEW YORK, May 23, 1906.

Pig Tin.—An exceptionally sharp decline of £31 on the London market during the week has brought the price of the metal in the New York market down to a more sane basis. The low price was reached on Monday of this week, when nearby shipments were sold at 40.65c. Business, however, was very dull. On Tuesday a slight improvement was noted and a correspondingly sharp advance, Tin being sold at 41.25c. There was a fair amount of business on this day. Several London houses look for higher prices and are not sellers at the present market. They attribute the sharp decline in price purely to manipulation. One reassuring fact for the American consumers is the disappearance of the big premium for spot in this market. This has been brought about through the dull business of the week, which has allowed some stocks to accumulate, there having arrived so far this month 2707 tons. There are afloat for American ports 1643 tons, of which 900 tons are on a direct steamer from London, scheduled to arrive here on the 28th. After this arrival spot Tin will be considerably easier, unless a new buying demand should spring up. The apparent cause of the decline last Wednesday was Powell's returns for shipments from the Straits for the first half of May, showing that shipments increased 428 tons, as compared with the same period last year. The market is still in that nervous state which responds very quickly to any change in sentiment or special news. To-day's London market is higher than yesterday, closing strong at £188 10s. for spot and £187 for futures. The New York market for spot is 41.90c. and for shipments ex Minnetonka 41.45c.

Copper.—There is good demand both from domestic consumers and European melters. The market for spot is slightly firmer, but Copper for August delivery is dull. The market may in a general way be quoted as follows: Spot Lake, 18.75c. to 19c.; futures, 18.62½c. to 18.87½c. Spot Electrolytic commands a premium, and 18.62½c. to 18.87½c. would probably be demanded, while futures are easy at 18.50c. to 18.62½c. For varying grades of Casting and all shipments a wide range of 18.12½c. to 18.50c. is quoted. In London the market is firmer at £85 5s. for spot, and £85 for futures, with Best Select held at £90. Electrolytic has been sold in Europe during the past few days at £87 10s. for futures and £89 for spot. The only signs of a slacking off in the foreign demand may be brought about by the lockout of electrical workers in Germany on June 26. This is considered as not unlikely, and would, of course, bring about a considerable decline in the demand for Copper from this country. The exports are large, aggregating 13,067 tons for

the first 21 days of this month. The apparent consumption for the first four months of 1906 in the United Kingdom is 2500 tons more than the corresponding period last year.

Lead.—The spot market appears to be somewhat easier, but there seems to be no spot metal available under 6c., although shipments can be obtained at 5.90c. In St. Louis spot is quoted at 5.90c. The American Smelting & Refining Company is quoting 5.75c. to cover old contracts, but at present is only selling at price current on date of shipment. Between 2000 and 3000 tons of Lead are afloat from Europe for this country. The London market is slightly lower at £16 15s.

Spelter.—Trade is very dull, consumers being able to satisfy their wants at 5.90c. to 6c. In St. Louis 5.80c. is quoted. The London market is unchanged at £27 2s. 6d.

Antimony.—Prices are purely nominal and business is very quiet. For Cookson's and Hallett's 27c. to 28c. is quoted; other grades, 26½c. to 27½c.

Nickel.—Prices are unchanged, large lots selling at 40c. to 45c.; smaller quantities at 50c. to 60c.

Quicksilver.—The market is quiet at $41 per flask of 75 lbs. in 100-flask lots; $42 for jobbing lots. The London market is unchanged at £7 5s.

Tin Plate.—The manufacturers of Tin Plate have advanced quotations 15c., due to the high price of Pig Tin. For 100-lb. 14 x 20 Coke Plates, $3.75, f.o.b. Pittsburgh, is quoted; $3.94, f.o.b. New York. Several of the independent mills have shut down, owing to the scarcity of Black Plates. The London market is slightly easier at 13s. 9d.

Old Metals.—The market is exceptionally firm, and there are no large lots available for immediate shipment, but inquiries are numerous. Dealers, when able to supply the material, are selling at the following quotations:

	Cents.
Copper, Heavy Cut and Crucible	18.00 to 18.25
Copper, Heavy and Wire	17.75 to 18.00
Copper, Light and Bottoms	16.00 to 16.50
Brass, Heavy	12.50 to 13.00
Brass, Light	10.50 to 10.75
Heavy Machine Composition	16.50 to 17.00
Clean Brass Turnings	11.50 to 11.75
Composition Turnings	13.50 to 14.00
Aluminum Scrap	26.00 to 28.00
Lead, Heavy	5.45 to 5.60
Tea Lead	5.20 to 5.35
Zinc Scrap	4.90 to 5.00

Iron and Industrial Stocks.

NEW YORK, May 23, 1906.

The stock market has been very dull, the daily transactions on the New York Stock Exchange having shrunk to almost the smallest for the year. Fluctuations have been light in most stocks, with the tendency downward. The range of the market from Thursday to Tuesday, inclusive, has been as follows on active iron and steel stocks: Steel common 40½ to 41¾, preferred 105¼ to 106¼; Car & Foundry common 40⅝ to 42; Locomotive common 68 to 70½; Colorado Fuel 49½ to 51¾; Pressed Steel common 50¾ to 51⅞; Railway Spring common 51 to 52⅛; Republic common 28 to 29, preferred 101½ to 102½; Sloss-Sheffield common 79 to 79¾; Tennessee Coal 144½ to 148½; Cast Iron Pipe common 48 to 49. Last transactions up to 1.30 p.m. to-day are reported at the following prices: Can common 7¾, preferred 62¾; Car & Foundry common 40¼, preferred 101; Locomotive common 68, preferred 115; Steel Foundries common 10½, preferred 45; Colorado Fuel 51½; Pressed Steel common 50½, preferred 97⅞; Railway Spring common 51; Republic common 27¾, preferred 102; Sloss-Sheffield common 79; Tennessee Coal 148; United States Cast Iron Pipe common 48⅞, preferred 92¾; United States Steel common 40, preferred 105.

Stockholders of the Westinghouse Machine Company May 21 approved the proposition to classify the indebtedness as bonds instead of debentures, and ratified the action of the Board of Directors in issuing bonds to the amount of $8,500,000, thus increasing the bond issue to $10,000,000. The receipts from the sale of bonds will be used in the extension of the plant and betterment of equipment. Large additions are contemplated at the plant at East Pittsburgh and extensive improvements are already under way, the business of the company demanding additional facilities.

The report of the International Nickel Company for the fiscal year ended March 31 last shows net profits applicable to dividends of $1,360,633, an increase of $692,539 over the previous year. The report records an increase in the export business and takes an optimistic view of the future. During the year $1,030,862 was expended for new construction and additional property.

The Shelby Iron Company's report for the fiscal year ended March 31 last shows net earnings of $41,706, an increase of $15,394 over the previous year. Dividends of $50,441 were paid, requiring $8735 to be taken from the surplus, which then stood at $244,138. President J. G. Bush states that the charcoal iron market did not respond promptly to the advance in coke iron and that active demand at better prices was very long delayed, most of the deliveries for the entire fiscal year being made at comparatively low prices. During the year 400 acres of timbered land were purchased and 3557 acres of timber rights. With some additional supply the timber will probably be sufficient to meet the company's needs for five or ten years.

Dividends.—Warwick Iron & Steel Company has declared a semiannual dividend of 2 per cent. payable June 11.

National Lead Company has declared the regular quarterly dividend of 1¾ per cent. on the preferred stock, payable June 15, and a quarterly dividend of 1 per cent. on the common stock, payable July 2.

Republic Iron & Steel Company has declared the regular quarterly dividend of 1¾ per cent. on the preferred stock, and a dividend of 2 per cent. on account of deferred dividends on the preferred issue, leaving 8 per cent. accumulated dividends unpaid.

Labor Notes.

Preparations are being made by the International Association of Machinists for a general demand for an 8-hour work day. At a meeting of the Pittsburgh district Executive Board last week it was decided to recommend to the Pittsburgh District Lodge that a demand be made for an 8-hour work day and a starting rate of 40 cents an hour, to take effect July 1. The district lodge, the controlling body of the association in Pittsburgh and vicinity, will meet on Sunday, June 3, to take action on the proposition and arrange for making a formal demand.

The structural iron workers have ended all their strikes at Chicago by voting to resume on the South Side Elevated Railroad extension. This work, which has been delayed for the past six months, will be rushed forward immediately. The improvements include the building of a third track for express service and extensions to Englewood and on Fortieth street. The work will be pushed so that the express service may be in commission by September. This is one of the strikes against the American Bridge Company, which has the contract for the work.

The demand of the Indianapolis machinists of 2½ cents per hour increase and a closed shop agreement has been met by the manufacturers by a firm refusal, and both sides are standing firm. Robert Wuest, acting commissioner of the National Metal Trades Association, is in the city, and a large and enthusiastic meeting of the manufacturers was held Tuesday. A local organization will be immediately formed and the fight conducted systematically. Machinists are being sent from New York, Philadelphia and Chicago to take the places of the strikers, and everything is quiet. The following firms are affected by the strike: Pope Motor Car Company, Atlas Engine Works, Premier Motor Mfg. Company, Ewart Mfg. Company, Indianapolis Rubber Company, Diamond Chain & Mfg. Company, F. W. Spacke Machine Company, and E. C. Atkins & Co., but other concerns are expected to be added to the list within the next few days.

The Chicago branch of the National Founders' Association was formally organized May 21. Paul Blatchford is secretary and George H. Tompkins assistant secretary of the Chicago organization. Practically all of the foundries where molders' strikes are still on have secured membership. The largest shops enrolled are as follows: L. Wolff Mfg. Company, Chicago Ornamental Iron Company, F. P. Smith Wire & Iron Works, Allis-Chalmers Company (Shop No. 2), Winslow Brothers Company, Vierling, McDowell & Co., Dearborn Foundry Company, Butler Street Foundry Company, Hansell-Elcock Company, American Brake Shoe & Foundry Company, Henry E. Pridmore, Preble Machine Works, Whiting Foundry Equipment Company, W. R. Perrin & Co., Franklin Foundry Company, Holmes-Pyott Company, Pyott Foundry Company, South Halsted Street Iron Works and the Link Belt Machinery Company.

JOHN A. KNISELY of the sheet metal working firm of Knisely Brothers, Chicago, died April 16. The business will be continued under the same name by Charles T. Knisely.

The Ten-Day Bond Customs Decision.

The action of the United States Supreme Court sustaining the contention of the Government in the so-called ten-days' bond case has aroused fears on the part of many large importers that a serious interference with business may result. The court, in a decision delivered by Justice Day, May 15, reverses the Circuit Court of Appeals and holds in effect that an importer who fails to return packages delivered to him at the time of entry, when called for by the collector, is subject to a penalty double the value of the packages not so returned. The test case had its inception in 1897, when the importing firm of Dieckerhoff, Raffloer & Co. imported certain merchandise which was entered at the New York Custom House, there being altogether seven packages. These were described in two invoices and appropriately numbered. Package No. 418 was designated by the collector to be sent to the Federal Public Stores for examination and appraisal, while the other packages were turned over to the importers under the provisions of section 2899 of the Revised Statutes. In the meantime the importers executed a redelivery bond for double the estimated value of the total importation, it being agreed that if the authorities called for the balance of the goods within ten days, and they were not produced, the bond should be forfeited.

The estimated value of the entire importation was $1522, this sum being indorsed on the back of the bond. Before the ten days had expired the collector made a demand on the importers for the production of package No. 420, but as this had gone into consumption the order could not be complied with. Thereupon the Government instituted suit upon the bond. At the trial of the case in the Circuit Court the value of the package not returned was estimated to be $184.56. It was conceded that the collector had called for the return of the package and that it was not returned, but beyond these admissions no evidence was offered by the importers. Counsel for the United States conceded that there was no proof that the Government had suffered actual damage. The Circuit Court directed a verdict in favor of the United States for $369.12, this sum being double the estimated value of the single package not returned by the importers. On appeal the United States Circuit Court of Appeals reversed the lower court, on the ground that it was incumbent upon the Government to make proof of the damages actually incurred by reason of the failure of the importers to return the package to the Custom House. The Supreme Court, however, decides that the first decision was the correct interpretation of the law.

The legal representative of several of the largest importing firms in this country, in speaking of the effect of the decision, had this to say to a reporter for *The Iron Age:*

There has been no decision of the courts in many years so far reaching in its possible consequences as the decision in this case. It happens that in the case that went to the Supreme Court the Government had called for only one package, and therefore the amount of recovery in the case was not very large; but it is by no means uncommon for the Government to call in all the delivered packages, or a large number of them, and in such a case, of course, an obligation on the importer to pay double the value of the packages which he could not return might mulct him in damages which would be ruinous. The trouble is that the statute governing this matter was made at a time when commerce was a very different thing from what it is in the twentieth century. Sixty years ago goods were chiefly, if not entirely, imported for stock, and were not sold until some time after their receipt. To-day, on the other hand, enormous quantities of imported goods are sold before they arrive, and the contracts are often overdue before the goods reach the port at all. Under these circumstances it is imperative that merchants shall be able to ship the goods at once from the port of arrival to the purchasers in the various parts of the country. If they are to be obliged to hold them until ten days after the appraiser returns the invoice or forfeit double the value of any of them which the collector may choose to call for, the interference with business will be most serious.

It is understood that an organized effort will be made by importing interests to mitigate, if possible, the severity of the ruling of the Supreme Court. Pending proposed remedial legislation by Congress it will be suggested to the Secretary of the Treasury and chief officers of customs that a rigid scrutiny be made of all applications by appraising officials for the return of merchandise to the public stores. An influential delegation of importers will probably visit Washington shortly for the purpose of discussing the situation with Secretary Shaw.

New Publication.

Directory of Directors in the City of New York, 1906. Published by the Audit Company of New York, 43 Cedar Street, New York City. Cloth. Pages, 1017. Price $5.

The eighth annual edition of this compilation contains, in the first part, a complete alphabetical list of directors or trustees having New York City addresses, followed by the names of companies with which each is connected. Each director's name is followed first by the name of the firm or company with which he is directly associated and then by all the companies of which he is a director. The book this year contains the names of over 24,000 directors. The second part of the work contains selected lists of corporations in banking, insurance, transportation, manufacturing and other lines of business, alphabetically arranged, accompanied in each case by the names of the principal officers and of directors or trustees. In addition to the directory, the publisher is prepared to furnish at a nominal cost lists of directors, arranged according to their professions or occupations. The work has gained an established position as a book of reference.

Auctioneering by Mail.

Valuable inventions often lie dormant or are stolen because inventors lack the time, opportunity or business ability and acquaintance which would enable them to dispose of their inventions profitably. Scores of manufacturers and capitalists would be glad to acquire the right to manufacture and market useful devices if the latter were brought to their notice. Both lose from lack of communication. What is needed is advertising by means of which the inventor can find the right buyer and the buyer the invention he wants.

The Geo. H. Gibson Company, advertising engineer, Park Row Building, New York City, which conducts the advertising of a number of leading machinery manufacturers, has recently taken up what is called auctioneering by mail. The concern acts as commission agent in the selling of inventions and uses personal representation and correspondence in bringing about a sale. The three members of the organization are engineers with practical experience in civil, mechanical, mining and electrical work, and have made, patented and sold inventions of their own. Their clients' inventions are presented in a bulletin entitled "Engineering and Manufacturing," which has just come to hand and which contains, in addition to descriptions of several new inventions, articles of interest to manufacturers and inventors.

One of the reports to be considered at the coming convention of the Railway Master Mechanics' Association is that upon cast iron for use in cylinders, valves, &c. The consideration of this subject in the association is expected to lead to the more general use of analysis in the purchase of pig iron for locomotive work.

Secretary R. W. Raymond of the American Institute of Mining Engineers, 99 John street, New York, announces that the Board of Directors has given him authority to replace at half the regular selling price all publications of the Institute belonging to its members and destroyed in the recent disaster at San Francisco.

The exports of locomotives from England thus far the present year show a substantial increase, as compared with the corresponding period for the two previous years. They have been materially increased by shipments on a large scale to South America.

The Machinery Trade.

NEW YORK, May 23, 1906.

The demand for machine tools is steadily increasing, and buyers are fairly falling over one another in their endeavor to secure machines. They are hustling from one store to another picking up what tools they can, and as a consequence stocks are sadly depleted. Dealers in this city say that their sales are only limited by the number of machines on which they can get a reasonable delivery. One merchant who has been selling machines for the past 18 years says that he never knew such an extended period of business activity, and in many quarters it is thought that the present trade is unprecedented. This enormous demand for machinery has prevailed for many months and seems to be on the increase, notwithstanding the fact that manufacturers have their capacities taken for months to come. As we have previously noted, the trade has consisted principally of small lots, there being a steady volume of orders for a few machines here and there, the large buyers hesitating to come into the market for extensive lists of tools. The volume of small orders continues to come in, and in addition the railroads have sent out for bids or are preparing specifications for very large quantities of machinery. There are now before the trade the list of the Southern Railroad, covering nearly 100 tools, and that of the Atchison, Topeka & Santa Fé, just issued, covering 37 tools. Specifications are being prepared by the New York Central Railroad for a large amount of both machine shop and power plant equipment, and these, with the extensive list of the New York, New Haven & Hartford Railroad, are looked for almost any day. The latter road is said to have decided upon the make of a good portion of the tools it will buy, if orders have not already been placed. Reports from Chicago state that the Chicago, Milwaukee & St. Paul Railroad will shortly enter the market for additional tools for its West Milwaukee shops, and that another railroad is considering the purchase of machinery, aggregating $100,000. Some important specifications for power plant equipment have been issued, while those for the Pennsylvania and New York Central stations and the Hudson Companies' terminal will soon be ready for bids. There are a number of substantial inquiries in the market from the big steel interests for rolling mill equipment and power machinery. It is understood that the United States Steel Corporation has been obliged to rearrange some of its plans for extensions because of the trouble experienced in getting deliveries. The company has met with considerable delay along that line and some proposed improvements have had to be postponed for a time, and the buying movement of the big interests will consequently be prolonged.

The dealers in second-hand machinery who have been reaping a large harvest because of the demand for all sorts of machinery equipment are up against the problem now of getting machinery to sell. Nearly every one that has any ancient equipment that can in any way be put into shape for service is using it, and many manufacturers who would discard old machines and substitute new ones, if they could get them delivered in a reasonable time, are doing the best they can with old tools rather than give orders which could not be filled within a year. Accordingly, the second-hand men find their supplies getting scarcer, and they are by no means able to fill the demand. What they are selling is bringing them good prices, however, and, generally speaking, they have but little to complain of.

Master Mechanics' and Car Builders' Convention.

The annual meetings of the American Railway Master Mechanics' Association and the Master Car Builders' Association will be held at Atlantic City, beginning June 13, and a number of New York branches of machinery houses have arranged for exhibits. The Master Car Builders' Association will hold its meeting from June 13 to 15, and the Master Mechanics' Association will meet from June 18 to 20. A large number of exhibits have already been booked, and space is even now at a premium. The general exhibit will be held on the steel pier, and the business sessions will also take place there.

During the Master Car Builders' and Master Mechanics' conventions, to be held at Atlantic City, June 13 to 20, the Niles-Bement-Pond Company will have on exhibition and in full operation one of its extra heavy 90-inch driving wheel chucking lathes. Owing to its great weight, this machine cannot be shown on the steel pier, therefore a special booth has been built, two minutes' walk south from the Pennsylvania Station on New York avenue, near Atlantic avenue, where the visitors will be invited to witness a demonstration of the machine.

The Chicago Pneumatic Tool Company, New York, will exhibit its latest pattern air compressor with mechanical intake valves, a complete line of its electric drills and one of its new rock drills at the conventions of the Master Car Builders and Master Mechanics, to be held at Atlantic City, N. J., from June 13 to 20.

Heavy Purchases Contemplated by New York Central.

One of the largest lists of machinery that has come before the trade for some time will soon be presented for bids by the New York Central Lines, which include the New York Central & Hudson River, West Shore, Lake Shore and Michigan Southern and the Michigan Central Railroads. This list, which will probably be sent out in sections, is of more than ordinary importance, because it will cover a great variety of machines, including machine shop, foundry, car shop, power plant equipment and possibly special equipment for taking care of electric locomotives. At the present time the company has a small list of machine tools out which is insignificant in comparison with the list now being prepared. The first additional list issued will cover the equipment for the power plant for the new Grand Central Station and terminal at Forty-second street, New York. The power plant at that point will be of about 20,000 horsepower, and, aside from the boilers, engines, generators and other electric equipment, there will be required quite an amount of pneumatic machinery, coal and ash handling machinery, &c. Other specifications that are now being prepared cover almost entirely machine tool equipment, most of it to be installed at the company's new shops at Indianapolis, Ind. This list will call for a very large number of machine tools as the shops are to be very extensive, covering 640 acres of ground and employing in the neighborhood of 3000 men. It is understood that the railroad has appropriated $3,500,000 for this work and that $1,000,000 of this amount will be spent this year. As a modern railroad city is to be established on a site of 2400 acres, there will also be required machinery for water, light and sewerage systems. It is said in the trade that the New York Central is also preparing to buy machinery for some of its other shops. It will be of interest to note here that the Michigan Central Railroad has not yet placed contracts for either the tunnel under the Detroit River or for the equipment for the large power plant that will be installed to operate the electric zone. This latter work is under advisement and awards of contracts can be looked for most any day.

The C. Pardee Works at Perth Amboy, N. J., has inquiries out for machinery equipment for an enlagement to be made to its plant there. The requirements include a 32-inch blooming mill, which is required for early delivery. Ario Pardee is president of the company and Samuel B. Morgan is vice-president, treasurer and general manager. Charles F. Eilert is the secretary.

It is said in the trade that the American Locomotive Company has a considerable number of inquiries out just now for machine tool equipment, and one of the leading machine tool interests has been given a large contract and is making some purchases on the side. The machinery is probably for the Brooks works at Dunkirk, N. Y., where considerable additions are being made. The company has also been buying some equipment for Schenectady and there are still some requirements to be filled, principally in the small tool line.

The recently incorporated Wyland-Newman Machine Company, Greensboro, N. C., intends to purchase a 36 x 36 inch by 8 or 10 foot planer and a 6 to 10 ton electric traveling crane, with 16 feet span, for its new plant, at Railroad and Jackson streets. The company has the remainder of the machinery required. The new plant will consist of a main building, 150 x 200 feet, two stories; foundry, boiler house, wareroom, &c., and will be equipped at a cost of about $15,000.

Quite a little new machinery will probably be required by the S. Severance Mfg. Company, Glassport, Pa., whose plant was recently destroyed by fire. The company intends to rebuild, but does not know yet what machinery it will require for the new plant.

Additions and New Plants.

It has been known for a long time that the demand for Curtiss turbines has so far exceeded the facilities of the General Electric Company that it would be compelled sooner or later to build extensive additions to its plant for building these machines. Plans have been completed for an addition to the turbine manufacturing department, at Schenectady, N. Y., which will be 150 x 800 feet, three stories high on one side, the main bay being one story. The building will be constructed of steel and brick and will contain approximately 240,000 square feet of floor space. It has not yet been determined as to the amount and character of new machinery that will be purchased to equip this building, but we are officially informed that it will contain considerable machinery of a special nature. As the company is to build quite an extensive addition to its shops at Lynn, Mass., the trade no doubt can look for considerable business from the company in the immediate future.

It is announced that the Southern Steel Company, Birmingham, Ala., which recently took over the Alabama Steel & Wire Company, will build a large steel car plant at Gadsden, at which plates, beams, car wheels, axles and, in fact, everything that goes into a steel car will be made. The plant will also produce structural steel for buildings and bridges and all kinds of shapes that are usually turned out

on a universal mill. These improvements will be in addition to the rod mill, wire mill and fence plant to be built at Gadsden, announcement of which has already been made. The company has been preparing for some time for these extensive improvements and is understood to be ready to go ahead with the work. It has arranged to take over the entire product of the Alabama Consolidated Coal & Iron Company's furnace for the period in which its own blast furnace is shut down for repairs.

The Chesapeake Sugar Refining Company, Baltimore, Md., has been organized, with a capital of $2,000,000, to construct a modern sugar refinery at Wagner's Point, Anne Arundel County, Md. The organization of the company is the culmination of a movement inaugurated by men with Baltimore business interests, who have been looking into the question of establishing an independent sugar refinery in that city. Some time ago a committee was appointed to take charge of the matter. The committee consists of George R. Bower of Philadelphia, Pa., president of the Baltimore Chrome Works Company; H. Carroll Brown of the New York and Baltimore banking firm of H. C. Brown & Co.; Francis K. Cary, president of the National Sugar Mfg. Company; Thomas J. Hayward of Bartlett, Hayward & Co.; C. Morton Stewart, Jr., of the firm of C. Morton Stewart & Co.; Charles A. Webb of A. L. Webb & Co., and John H. Windfelder, general manager of the National Sugar Mfg. Company. Last week they decided to build a plant, with a capacity of 1500 barrels a day, for the making of all grades of refined sugar from cane imported from the West Indies and elsewhere. According to present arrangements, Mr. Windfelder will resign as the manager of the National Sugar Mfg. Company and will take charge of the new plant. The company has planned that all the stock shall be pooled until January 1, 1913, and application will be made to list the corporation's certificates on the Baltimore Stock Exchange. The George M. Newhall Engineering Company, Limited, 136 South Fourth street, Philadelphia, is the consulting engineer.

The H. G. Kotten Company has been organized, with offices at 120 Liberty street, New York, to take up the business of H. G. Kotten, and the company will manufacture air compressors and other pneumatic machinery. At present the company will have its product made, but later on it is anticipated a plant will be built in the vicinity of New York. The amount of capital is $200,000, and the directors are H. G. Kotten, G. S. Dayton of Englewood, N. J., and G. W. Knappmann.

Now that the State Water Supply Commission has approved of the city's plan for a water supply extension to cost about $160,000,000, it is thought that work of constructing the system will soon be started.

Large Power Projects.

It is understood that the Hudson companies have let contract for the large terminal to be erected on Church street, from Fulton to Cortland. The contract for the substructure, amounting to $2,000,000, which will include all the work below the sidewalk, has been given to the O'Rourke Engineering Construction Company, and the Fuller Construction Company, it is understood, has the contract for the superstructure. The building will be about 22 stories in hight, and its construction will necessitate the purchase of a large amount of machinery equipment, such as air compressors, engines and boilers and a general power equipment. No information regarding the contracts can be obtained officially from the company, but it is said in the trade that Westinghouse, Church, Kerr & Co. have been given the power job.

Westinghouse, Church, Kerr & Co., 8 Bridge street, New York, have been awarded the power contract for the new Pennsylvania Railroad Station, to be erected on Thirty-first street, between Seventh and Eighth avenues, and it is thought that the company will soon come into the market for some minor equipment to be used in the work. Plans show that the terminal will be an immense one, with a frontage of 430 feet, and it will be 780 feet on the sides. The tracks will be 40 feet below the surface of the street, and from the street level the building will be 60 feet high, except in the center, where the roof of the general waiting room will be 150 feet from the ground.

The Board of Estimate of the city of New York has, after four years' deliberation, granted a franchise to the New York & Portchester Company to construct and operate a railroad in the Bronx, which will begin at the Southern boulevard and run for 110 miles through New Rochelle, Portchester and other small towns into Connecticut. C. O. Maillou, 76 William street, New York, is electrical engineer for the company, and he is preparing plans for the power house and arranging other details connected with the mechanical end of the scheme. It is understood that most of the necessary surveys have been completed, and before the summer is over actual work of construction will be begun. As yet no information can be obtained as to the size of the power house and substations, and the question of their location has not been decided upon. The company will build a repair plant in connection with its line, and perhaps other buildings. As yet no arrangements have been made for the necessary equipment, nor have any contracts been given for the construction work. The buying will not be done until the latter part of the year. The project has been before the trade for more than four years, and the delay is explained by the fact that there was some contention between the Board of Aldermen and the Board of Estimate regarding the application for a charter. The company has obtained a 25 years' franchise, with a provision on a readjustment on the price to be paid the city for a renewal of 25 years. It has been stipulated that within two years of execution of the contract the company must expend $800,000 and within three years $1,000,000 upon the actual construction of the road between Westchester avenue, near the Southern boulevard, and the city line. It will be seen from this that the company must begin the work of construction very shortly, and according to those in charge there will be little delay.

Requirements of J. G. White & Co.

Bids are being received by J. G. White & Co., 43 Exchange place, for an electric lighting plant to be installed in the State capitol at Albany. Competition will close on June 2 and the specifications include two 250-kw. generators, one 100-kw. generator, two 20-kw. 40-cycle 1150-volt motor generator sets, one 20 horse-power motor, one Blake triplex pump, two 375 horse-power engines, one 150 horse-power engine, one 100 horse-power vertical feed water heater, one Manzell Brothers cylinder oil pump, two duplex water feed pumps, ten motors of sizes ranging between 7½ and 20 horsepower. The bids are being received by J. G. White & Co., as consulting engineers.

J. G. White & Co., 43 Exchange place, will shortly come into the market for equipment for a high grade interurban trolley line to be constructed between Rochester and Lockport, N. Y., generally paralleling the lines of the New York Central Railroad. About $2,000,000 will be spent by the syndicate owning the line, which is represented by Frederick Nichols, E. R. Wood and Sir Henry M. Pellatt, all of whom are connected with the Ontario Power Company. The line will consist of 54 miles, graded for double track road, although a single track will be laid at first. J. G. White & Co. will build five substations, as well as large repair shops and car barns, and will supply all the rolling stock. The track construction will be heavy, and the line will be graded with a view to maintaining high speed. The power will be supplied by the Ontario Power Company at 60,000 volts pressure and will be reduced to a standard working pressure for direct current railway service. It is understood that none of the equipment for the power and repair plants has been purchased as yet, and it may be a few weeks before that matter will be gone into. The buying will undoubtedly be done in New York.

The Government has awarded a contract to Speyer & Co. for the building of about 425 miles of new railroad in the Philippines, on the Island of Luzon, and it is thought that J. G. White & Co., who have already begun operations in railroad construction on the islands of Panay and Negros, will also have the contract for the Luzon railroad. As was pointed out in these columns last week, J. G. White & Co. will have the spending of large amounts of money for machinery equipment and it is thought that most of the expenditures will be made through the New York office of the company.

Catalogues Wanted.—In the fire which recently destroyed the plant of J. P. Symons & Co., Centralia, Wash., the files of catalogues were destroyed. The company desires catalogues of iron working and foundry machinery and supplies, steam fittings, brass goods and mill supplies.

Chicago Machinery Market.

CHICAGO, ILL., May 22, 1906.

After a lull of several months Western roads are again contemplating heavy purchases of tools and equipment, and the total requirements under consideration and specified would easily cost $200,000. The Atchison, Topeka & Santa Fé has just promulgated a list covering an assortment of 37 tools for its various shops, and the Chicago, Milwaukee & St. Paul will shortly enter the market for additional equipment for its West Milwaukee and other shops. These additional requirements will supplement the large amount of machinery purchased several months ago, a large portion of which was placed with the Niles-Bement-Pond Company and Manning, Maxwell & Moore. Another road is also considering the purchase of more than $100,000 worth of tools, and it is expected that the list will shortly be ratified. Throughout the West foundries are adding to their melting capacity and making additions to their general equipment. This has resulted in heavy purchases of cranes and other foundry tools, and the manufacturers of these lines are months behind on deliveries. Stocks on the floors of local dealers continue exceptionally light and there is little opportunity for replenishment in the near future, manufacturers having their output sold for from three to six months ahead.

Atchison Railroad Machine Tool List.

The Atchison, Topeka & Santa Fé Railroad has issued specifications for an assortment of new tools for its various shops. The list includes the following: Two upright 28-inch drill presses, with back gear, hand and power automatic stop; one 42-inch steel tired coach wheel lathe, having a capacity for the largest M. C. B. axles, belt driven (quotation also asked on motor driven); one 2-inch pipe cutting and threading machine, one 4-inch pipe cutting and threading machine; one Whiting 2½ x 20 inch wet tool grinder, one planer attachment for planing locomotive links; one motor driven plate bending rolls, capacity 1-inch plate, 12 feet wide, with motor suitable for 440 volts (quotation also asked on belt driven machine); one belt driven rotary bevel shear, capacity ¾-inch plate; two hand splitting shears for ⅜-inch plate; one single and belt driven punch, with architectural jaw, 25-inch throat, capacity ⅝-inch hole and ⅝-inch plate; one 800-pound single frame steam hammer; two J. M. Robinson 8-foot cornice brakes, with bending attachment for No. 16 iron and lighter; one foot power 37-inch squaring shears for No. 16 iron and lighter, one hand power 2-inch pipe bending machine; one Stow's No. 4 6-inch bending machine, with four pairs of rollers and rotary standard; one Stow's adjustable bar tin folder, No. 54; one Stow's incased large turning machine; one long stroke piston pattern duplex steam pump, approximately 14 x 8½ x 12 inch; two steam driven duplex two-stage air compressors, capacity 750 feet of air; one simple horizontal self contained automatic self oiling engine; one large automatic railroad cut off saw, with 22-inch saw; one patent automatic railroad cut off saw, with 22-inch saw; one Greenlee No. 3 heavy self feed rip saw, with 30-inch saw; two 24-inch rip saw tables; one 36-inch band saw, with metal frame; one automatic band saw setter and filer; two three-spindle vertical medium weight car borers, complete with bit sockets and 17 bits; one 1½-inch vertical hollow chisel mortiser, medium weight, complete with chisels and bits; one single cabinet finishing planer, 6 x 30 inch, with solid rolls; one double surfacing planer, 12 x 27 inch; one fast feed flooring machine, planer and matcher, 6 x 24 inch.

The Lowell Steam Plow Company, formerly of Kansas City, Mo., has decided to move to Macon, Mo., the latter city having deeded a suitable factory site, 250 x 300 feet, and given $7500 cash bonus as an inducement toward securing the plant. Work has already commenced on the construction of the buildings, which will be completed in about three months. A portion of the machinery equipment has been purchased. At present the McCall Mfg. Company, rake manufacturer, of Macon, is manufacturing the plows, but the heavy demand has necessitated the erection of a plant for this purpose alone. Operations will be begun with a force of 50 to 60 men.

The Kokomo Brass Works, Kokomo, Ind., has had plans prepared for a new building, 36 x 132 feet, two stories in hight. Most of the equipment will be removed from the present factory into the new building and the former will be utilized as an aluminum foundry. Plans are not yet sufficiently matured to determine what additional equipment will be required. It is not expected that the plant will be completed before next fall. The company manufactures plumbers' specialties and automobile accessories, and the following are its officers: Chas. T. Byrne, president and secretary; James F. Ryan, vice-president, and John W. Johnson, treasurer and manager.

The Grand Rapids Hand Screw Company, Grand Rapids, Mich., has purchased 4 acres of ground, on which will be erected next year a three-story building, 70 x 300 feet. No architects have been chosen and plans will not be prepared for several months.

The Chicago Bridge & Iron Works, Chicago, has completed a new building, which will be used as machine and blacksmith shop. It is 110 x 165 feet. No additional equipment has yet been purchased.

The Home Stove Works, Chicago, is adding to its plant a new foundry building, three stories, 80 x 160 feet, and also a new engine house and power plant. The plant is located at the corner of Rockwell street and Eighteenth place. The power plant will consist of two Weber producer gas engines, of 125 and 80 horse-power respectively. These will drive direct connected direct current generators, developing the electricity to be used for power and light.

The Wallace Machine & Foundry Company, Lafayette, Ind., is adding to its plant a new building, to be used as an erecting shop for structural steel work. It will be 47 x 107 feet, having truss roof and provided with an overhead track for handling material. The company has added to its equipment a Norwalk air compressor, with a capacity of 205 cubic feet of air; one 27-inch yoke riveter, one large flange riveter, chipping and riveting hammers, air reamer and a column lathe.

The Western Electric Company, Chicago, is erecting at its Hawthorne, Ill., plant new wood working shops, which will be five stories, 255 x 375 feet. Some of the equipment has been purchased for this building, but a large part is still unplaced.

The Northwestern Car & Locomotive Company, Chicago, has been incorporated with a capital stock of $300,000 and the following officers have been chosen: C. H. Wilcox, president; A. W. Houston, vice-president, and H. W. Buckingham, secretary and treasurer. The company has bought the plant and equipment of the old Chicago Car & Locomotive Works at Hegewisch, Ill., and will operate the works in building cars and in repairing and rebuilding locomotives and cars. The general offices of the company are at 542-544 Monadnock Building, Chicago.

The city of Winnipeg, Manitoba, will receive bids until June 4 on two revolving field three-phase alternating current generators, 2200 voltage.

The Allis-Chalmers Company, Milwaukee, Wis., in addition to the office recently established in Oakland, Cal., at 906 Broadway, has opened quarters in the Atlas Building, 602 Mission street, San Francisco.

Catalogues Wanted.—Chas. T. Allen, 265 Maple street, Battle Creek, Mich., will be pleased to receive catalogues and samples along the line of pumps, pumping machinery and accessories.

Philadelphia Machinery Market.

PHILADELPHIA, PA., May 22, 1906.

Buying of machine tools, while not on a very extensive scale, has been fairly satisfactory to both manufacturers and dealers. A much greater volume could have been taken care of, but with manufacturers still well behind on deliveries and order books comfortably filled, the absence of orders for a short time is not looked upon with any degree of apprehension for the future. Business is comparatively well distributed, and the outlook for future buying is considered very promising. Here and there a sale of a heavy tool has been made, which has added materially to the week's total sales.

There is a good volume of inquiries before the trade, but considerable hesitancy is displayed on the part of buyers before placing the business. There seems to be an apathy on the part of the railroads, particularly those which center in this city, in making purchases of tools in any quantity. An occasional specification for one or more tools for early delivery has come out, but specifications covering any extensive equipment continue to be withheld. The Baltimore & Ohio, however, is understood to have a small list out for a number of tools for distribution among its various shops.

Deliveries continue to play an important part in the placing of orders. Manufacturers are unable to do better than three to five months in the delivery of certain classes and sizes of tools, and the prospective buyer who desires prompt delivery withholds his order, and frequently is compelled to purchase tools which, while not entirely suitable, will serve his purpose; or, as has been done in a number of cases, he purchases second-hand tools.

Some fair export sales have been made, but the aggregate business has not been large. Machinery specialties continue in good demand and recent shipments of pressed steel pulleys, hangers, &c., for foreign account have been quite large.

A fairly good demand for boilers and engines continues, confined during the past week, however, largely to those of the medium powers. An increased business in the heavier types of power equipment is expcted at an early date. Second-hand machine tools as well as medium powers of boilers and engines and gas and gasoline driven engines have been in good demand. Some sizes, however, are hard to obtain for prompt shipment.

The iron and steel foundries continue very active. The Federal Steel Castings Company, a new concern, has purchased the plant of the late Delaware River Steel Castings Company, at Chester, Pa., and expects to get it in operation early next month. This additional tonnage should help deliveries of steel castings to some extent. There is no change in the gray iron casting situation. The tonnage offered and taken is large and the trade finds it difficult to obtain castings as promptly as desired .

R. W. Barwood and R. H. Snider, who have been connected with the late J. W. Cregar Agency in this city for a long period of years, have formed a copartnership, under the name of Barwood & Snider, with offices at 367 Bourse Building, where they will transact a general business in machinery and small tools.

J. Walter Cregar, trading as the J. W. Cregar Agency in machinery and machine tools on The Bourse machinery floor, filed a voluntary petition in bankruptcy May 19. Mr. Cregar was embarrassed by the recent failure of the Reliance Brass Company, Salem, N. J., of which he is a creditor to the amount of $30,000.

The Stoever Foundry & Mfg. Company, Myerstown, Pa., continues busy in all departments, and the prospects are favorable for a continuance of present conditions. Among some of the recent orders for pipe machines taken by this company has been one from the Allis-Chalmers Company, for two motor driven machines for its Milwaukee plant; one machine, of the motor driven type, for the Otis Elevator Company, Chicago, and one for the Globe-Wernecke Company, Norwood, Cincinnati. Two machines have been ordered by the Pennsylvania Railroad and one motor driven

machine is to be furnished the Cambria Steel Company, Johnstown, Pa. The improvements contemplated by the Stoever Company, mention of which was made in these columns, have been delayed, owing to the press of other matters, but it is expected that they will be taken up before a great while.

The Powers-Weightman-Rosengarten Company, manufacturing chemists, will shortly begin work on a new two-story factory building, 54 x 104 feet, at its plant at School Lane and the Philadelphia & Reading Railroad. The new building is to be used in the manufacture of chemicals.

The Hilles & Jones Company, Wilmington, Del., has during the last month considerably increased the capacity of its plant. A number of machine tools have been purchased for the machine shop equipment, as well as a complete outfit of wood working tools for the pattern shop. Business conditions continue satisfactory, large orders having been taken for punches, shears, plate bending and straightening rolls, &c. The condition of the company's order books has made it impossible to replenish tools sold from stock.

The Nazel Engineering & Machine Works, manufacturer of special machinery, reports a good volume of business. Inquiries have been numerous, both from foreign and domestic sources. A number of satisfactory orders have been booked, and the outlook is considered most promising. Among recent deliveries of special machinery were a large double head centering machine for locomotive driving wheel axles, hoop bending machines, heading machines for chandelier work, and paper and paper box machines.

The Baldwin Locomotive Works has awarded to Roydhouse, Arey & Co., architects and engineers, a contract for extensions to two of the buildings of the recently acquired foundry plant at Eddystone, Pa., increasing the length of each nearly 1000 feet. These will be used exclusively for molding floor space. The buildings will be of brick and steel. The company will also erect at this plant a smith shop, 50 x 400 feet, for hand forging work. The erection of a five-story addition, 50 x 160 feet, to the office at Broad and Spring Garden streets, in this city, has also been decided upon. An additional story is also to be added to the present office building. The Baldwin Works continues exceedingly busy, orders recently taken including one for 36 locomotives for Mexican railroads, and another for 15 Pacific type passenger locomotives for the Chicago, Burlington & Quincy Railroad. A large number of orders for single engines from industrial plants have also been recently booked.

New England Machinery Market.

WORCESTER, MASS., May 22, 1906.

Opinion among the machinery dealers of Boston and other New England centers appears to differ as to the effect of the advance in prices on the demand for machine tools. Most of the dealers, however, state that customers make little comment upon the greater prices on lathes, planers, shapers and upright drills, which comprise the tools included in the advance of 5 per cent. A few dealers report having heard objections raised by their customers. However, the failure on the part of customers to purchase at this time will merely defer their orders until later, and while dealers may object to the loss of some business, the manufacturers will be perfectly willing to have orders held up for a while, so great is the demand for their product. Deliveries on most lines of tools keep getting farther and farther away. The year 1907 appears much more often in quoted time of deliveries. Certain exceptional lines cannot be had until nearly the end of 1907, more than a year away. Consequently it is but natural that manufacturers of machine tools rather welcome the idea of business falling off a little, thus extending the demand over a longer period of time.

Much complaint is heard of the difficulty in procuring castings. Probably the several foundry strikes in progress in New England and elsewhere have considerable to do with this, but this condition began months ago. Generally speaking, the trouble is not really serious, for it has not affected deliveries of completed machine tools to any extent. The foundry capacity of New England has been considerably increased and will be more so within a few months, when foundry extensions, building and planned, are completed.

The manufacturers of wire drawing machinery and other equipment of wire factories state that the demand for their machinery is almost unprecedented. It is difficult to get a reasonably early delivery on most of this type of machines. One manufacturer reports that if not another order was taken there is enough business on his books to keep his works going full for the rest of this season. Rolling mill machinery is also in strong demand, but hardly more so than it has been for a considerable period, so the builders state.

It was stated recently in this column that machine tool builders are holding back the announcement of improvements to their product until the time shall come when it will be necessary to stimulate their business. This tendency is more general than is realized, extending into many lines of machinery employed in the working of metals which are not classed strictly as machine tools. Manufacturers of special machinery who use their machines to manufacture for the market as well as disposing of the machines to competitors in the manufactured product are more inclined than ever to hold on to their machinery until the cream has been taken from the market for the product. This has usually been the case, but not to the same extent as now.

The business of C. H. Brown & Co., Fitchburg, Mass., manufacturers of steam engines, has been incorporated in Massachusetts, with capital stock of $75,000, the purpose of the reorganization being to increase the working capital and extend the business. The business is an old one. For 35 years a standard steam engine of average power has been built at the shops at Fitchburg. The officers of the corporation are: President, Walter F. Brown, Boston; secretary and treasurer, William L. Sargent, Fitchburg; directors, these officers and Moses J. Perault, Edward J. Welch and F. E. Brown, all of Fitchburg. The incorporators include other prominent Fitchburg men, among them C. H. Brown, Jr., one of the family which founded and ever since has operated the business.

The Whitlock Coil Pipe Company, Hartford, Conn., is to make large additions to its plant in Elmwood, which will not only replace the building recently destroyed by fire, but will practically double the plant. The additions will consist of a two-story building, 50 x 219 feet, for the sheet metal and brass department; one-story building, 120 x 260 feet, for the iron coil department, and a one-story building, 120 x 140 feet, for big bend work.

The Henry & Wright Mfg. Company, Hartford, Conn., manufacturer of high speed sensitive drill presses, has again found it necessary to increase its manufacturing space and has taken the floor of the building which was formerly the home of the Spencer Automatic Machine Screw Company, now gone out of business. This new space is 30 x 125 feet.

The Independent Die Company, Brockton, Mass., will need a drill press and lathe in connection with additions to its plant.

The Billings & Spencer Company, Hartford, Conn., manufacturer of drop forgings and small tools and power hammers and other forge shop tools, is to build a large extension to its machine department, which has become inadequate for the company's needs, owing to the great demand for its hammers and other machinery. The building will be 55 x 240 feet, one story, with bays. The floor will be served by a 20-ton traveling crane.

The Johns-Pratt Company, Hartford, Conn., manufacturer of electrical specialties, is to make large additions to its works this season, but no decision has been reached as to the form the extension may take. It will either be a building about 50 x 400 feet, a building connecting present buildings or the raising of the present buildings several stories. Whatever the decision, the enlargement will be a considerable one.

The Florence Mfg. Company, Florence, Mass., is considering making some additions to its electric lighting plant.

The F. R. Patch Mfg. Company, Rutland, Vt., manufacturer of stone working and other machinery, will extend its foundry by an addition 80 feet square, with concrete walls, with monitor roof, and will erect a pattern house and office building, 50 x 100 feet and two stories. A Niles five-motor two-trolley 15-ton electric crane has been installed, and will serve the addition as well as the present foundry.

The Waltham Foundry Company, Waltham, Mass., is to erect a new foundry building, 44 x 80 feet, as an addition to its plant.

The Torrington Mfg. Company, Torrington, Conn., builder of special machinery, is to build an addition to its plant, 72 x 120 feet, one story, with a 40-foot crane space, to be served by a 10-ton traveling crane. The new building will increase the company's machine department.

The Gates & Lippitt Mfg. Company, Norwich, Conn., has been organized under Connecticut laws, with a capital stock of $100,000. The intention is to manufacture special machinery, machine screws and the Gates automatic phonograph. The plan is to branch out into automatic firearms later on. The incorporators are William H. Gates, Morris S. Lippitt and Costello Lippitt, all of Norwich.

The Coulter & McKenzie Machine Company, Bridgeport, Conn., manufacturer of special machinery and iron castings, is adding to its foundry to provide room for the cleaning and shipping departments. The contract for a traveling crane has been placed with Maris Bros., Philadelphia.

A Machinery Exchange has been established in the Oliver Building, Oliver street, Boston, for the exhibition of machinery, tools, power equipment, &c.

A bill providing for an eight-hour day and the prevailing rate of wages on all State and municipal contract work has passed the Legislature at Albany, N. Y., and has been signed by the Governor. It is a re-enactment of section 3 of the Labor bill, which, before the adoption of the constitutional amendment last year, had been declared unconstitutional.

Government Purchases.

WASHINGTON, D. C., May 22, 1906.

The Bureau of Supplies and Accounts, Navy Department, Washington, will receive bids until June 19 for the following machine tools for the Mare Island Navy Yard: Dry grinders, crank press, lathe, die slotting machine and saw table.

The Isthmian Canal Commission will soon ask bids for electric plant equipment for Golgona, on the Isthmus of Panama, consisting of one 160 horse-power engine and two 50-kw. direct connected generators.

The Bureau of Supplies and Accounts, Navy Department, Washington, will receive bids until June 12 for motors, valve reseating machine and other supplies for the Mare Island and Puget Sound navy yards.

The United States Reclamation Service, Chicago, Ill., will receive bids until June 7 for ten or more motor driven centrifugal pumps, to be used on the Garden City project at Deerfield, Kan.

Proposals will be received until June 15, at the office of the quartermaster, Atlanta, Ga., for an ice and refrigerating plant, pump, boiler and appurtenances for installation at Fort Dade, Fla.

The Bureau of Supplies and Accounts, Navy Department, Washington, will receive bids until June 5 for a quantity of supplies for the Eastern navy yards, including motors.

The Bureau of Yards and Docks, Navy Department, Washington, will receive bids until June 2 for two motor generator sets for the New York Navy Yard.

H. B. Feairs, superintendent, Haskell Institute, Lawrence, Kan., desires bids on five electric motors, aggregating about 23 horse-power; wood worker, mortiser, band saw, tenon machine, screw cutting lathe, drill press, shaper, edge and creasing machine, emery grinder, shafting, pulleys, &c.

W. S. Campbell, superintendent of the Indian School, Pipestone, Minn., desires bids on a planer, cut off saw, drill, engine lathe, mortising machine, 10 horse-power gasoline engine and other supplies.

The following bids were opened May 10 for machinery for the Isthmian Canal Commission, circular No. 306:

Bidder 4, American Woodworking Machinery Company, New York; 7, A. Baldwin & Co., New Orleans, La.; 10, Bentel & Margedant Company, Hamilton, Ohio; 15, Buffalo Steam Pump Company, New York; 16, Camden Iron Works, Camden, N. J.; 17, A. S. Cameron Steam Pump Works, New York; 22, Drew Machinery Agency, Manchester, N. H.; 25, Fairbanks Company, New York; 27, Fox Bros. & Co., New York; 29, Gardner-Gouvernor Company, Quincy, Ill.; 36, Handlan-Buck Mfg. Company, St. Louis, Mo.; 52, John H. McGowan Company, Cincinnati, Ohio; 56, Manhattan Supply Company, New York; 57, Manning, Maxwell & Moore, New York; 60, J. H. Menge & Son, New Orleans, La.; 64, Motley, Green & Co., New York; 68, Niles-Bement-Pond Company, New York; 69, Norton Emery Wheel Company, Worcester, Mass.; 70, S. Obermayer Company, Cincinnati, Ohio; 74, Platt Iron Works Company, Dayton, Ohio; 77, Pratt & Whitney Company, Hartford, Conn.; 79, H. A. Rogers Company, New York; 82, Sherman-Brown-Clements Company, New York; 88, Stiles-Morse Company, Chicago, Ill.; 96, Whiting Foundry Equipment Company, Harvey, Ill.; 106, Dean Steam Pump Company, New York; 107, Fairbanks, Morse & Co., bid by telegram.

Class 1. One hydraulic wheel press—Bidder 16, $995; 27, $1144; 36, $1147; 57, $1137.50; 68, $949; 79, $1076.95.

Class 2. Six feed pumps—Bidder 7, $1650; 15, $1972.80; 17, $1350; 22, $1584 and $2034; 27, $1974; 29, $1825; 52, $1740; 57, $1852; 60, $2059; 74, $1428; 88, $1483.02; 106, $1370.64 and $1238.10; 107, $1776.

Class 3. Six grinders—Bidder 25, $295; 27, $218.48; 36, $238; 54, $285; 56, item 4, $210; 57, $273.35; 69, item 4, $191; 82, item 3, $148; 88, item 3, $170 plus and $10.30 each for countershafts.

Class 5. One foundry cupola—Bidder 27, $857; 70, $990; 96, $820.

Class 6. One planer—Bidder 4, $576.75 or $621.70; 10, $490; 27, $297.49; 36, $450; 57, $416.17; 88, $316.02.

Class 7. One engine lathe, 42 inches—Bidder 25, $2500; 54, $2473.34 plus $350 for raising blocks; 57, $2227.10; 68, $3274.

Class 8. One slotter—Bidder 57, $3915; 64, $4200; 68, $3627 and $4025.

The Isthmian Canal Commission opened the following bids on May 16 for item 1, six horizontal tubular boilers:

A. D. Granger Company, New York, item 1, $9372, delivery New York; $11,222, f.o.b. Colon.

Manning, Maxwell & Moore, New York, item 1, $11,484, delivery Colon.

Motley, Green & Co., New York, item 1, $10,494, delivery Colon.

Oil City Boiler Works, New York, item 1, $16,554, delivery Colon.

Phœnix Iron Works Company, Meadville, Pa., item 1, $9900; alternate with charcoal iron tubes, $10,950; delivery Colon.

The Walsh & Weidner Boiler Company, Chattanooga, Tenn., item 1, $12,500, delivery Colon.

The following awards have been made for supplies for the navy yards, bids for which were opened May 1:

Chicago Pneumatic Tool Company, New York, class 71, two No. 00 direct acting rotary pneumatic drills and five No. 0 pneumatic drills, $344.

Fairbanks Company, New York, class 73, one 14-inch drill press, with direct connected motor, $185; class 74, one 21-inch back geared drill press, $137.50.

Prentiss Tool & Supply Company, New York, class 102, one 15-inch post shaper, $295.50.

Election of Tennessee Coal, Iron & Railroad Company Officers.

The annual meeting of the directors of the Tennessee Coal, Iron & Railroad Company, which was postponed from May 15, was held at the company's offices, 111 Broadway, New York, on May 22. The following officers were elected: Chairman, John A. Topping; vice-president and general manager, F. H. Crockard, Birmingham, Ala.; secretary and treasurer, L. Hoover, Birmingham; assistant secretary, Hugh Dewart, New York; assistant treasurer, T. M. Nesbitt, Birmingham; Executive Committee, John A. Topping, John W. Gates, L. C. Hanna, E. W. Oglebay, Grant B. Schley.

It was the original intention to elect a president of the company at this meeting, but that office will not be filled for the present. The new vice-president, who has received the appointment also as general manager, will direct the manufacturing operations of the company, with headquarters at Birmingham. Mr. Crockard has been connected, since his graduation from Troy Polytechnic Institute, with what is now the Riverside plant of the National Tube Company at Wheeling, W. Va., serving in the capacity of metallurgist, as chief engineer and in recent years as general manager. His connection with the Tennessee Company began this week, and his first work will be an inspection of the properties, with a view to detailed recommendations relative to the improvements that have been agreed upon. A meeting of the Executive Committee with Mr. Crockard will be held in New York in the near future, when final decision will be made as to the new work to be undertaken on the general lines indicated in *The Iron Age* of May 10, 1906.

In connection with Mr. Crockard's appointment, announcement is made that George L. Collard, heretofore of the Clairton plant of the Carnegie Steel Company, becomes general blast furnace superintendent of the Tennessee Company. He will also have general charge of the Southern furnaces of the Republic Iron & Steel Company.

The West Virginia Board of Trade, which shows more stir than many similar State organizations, publishes a 50-page pamphlet devoted to the resources and opportunities of West Virginia and features of its development thus far. A brief résumé of the industrial characteristics of West Virginia comes first, this containing the striking statement that the stream of outside money flowing into the State for coal, timber and railroad development alone is now estimated at over $50,000,000 a year. The bulk of the pamphlet is devoted to the progress made by various industrial towns in West Virginia and what they have to offer firms seeking sites for manufacturing. The West Virginia Board of Trade was organized in 1905, and its secretary is R. B. Naylor of Wheeling.

The engineering corps employed in the construction work of the new 14-inch mill of the Jones & Laughlin Steel Company, Pittsburgh, gave a farewell banquet in the Monongahela House in that city last week. Work on the mill has been completed, and the 30 engineers were notified that their services would no longer be required. S. Y. Yoder, head construction engineer, was toastmaster. Most of the men have obtained positions elsewhere, and a number will go to San Francisco to assist in the work of rebuilding the city.

CONTENTS.

PAGE.

Hulett Coal Handlers at Duluth. Illustrated....1669
Cost of Talbot and Stationary Open Hearth Furnaces....1670
Changes During the Cooling of Cast Iron. Illustrated....1671
The Thor Pneumatic Tools. Illustrated....1675
The Canadian Iron and Steel Production....1677
The Coates Lathe Grinder. Illustrated....1678
An Exhibit of Foundry Equipment....1678
A Blast Furnace Charging Apparatus. Illustrated....1679
A Method of Rolling Sheets Without Doubling....1679
Bearing Metals and the Advance in Tin....1679
The Backstrom-Smith Steam Turbine. Illustrated....1680
San Francisco's Rehabilitation....1682
Dry Air Blast for Furnaces....1682
The Reed Multiple Drilling Attachment. Illustrated....1683
The Pennsylvania Railroad's New York Passenger Station....1683
The National Association of Manufacturers....1684
The American Foundrymen's Association....1685
The Zug Iron & Steel Company....1685
The Western Electric Company's Hawthorne Works....1686
Troubles with East River Tunnels....1687
Republic Iron & Steel Company Changes....1687
Editorial:
- Some Factors in the Iron Trade Outlook....1688
- Lake Labor Troubles and the Ore Movement....1688
- Looking for Tariff Revision....1689
- Expansion in the Drop Forging Industry....1689
- Stronger Foreign Markets....1690

The Amalgamated Association Scales....1690
The Status of the Iron Molders' Strikes....1691
San Francisco Addresses....1691
Loss of Air in Blowing Iron Furnaces....1692
Personal....1693
The Tennessee Coal, Iron & Railroad Company....1693
News of the Works:
- Iron and Steel....1694
- General Machinery....1694
- Power Plant Equipment....1694
- Bridges and Buildings....1694
- Foundries....1695
- Fires....1695
- Hardware....1695
- Miscellaneous....1695

The Iron and Metal Trades:
- A Comparison of Prices....1696
- Chicago....1696
- Birmingham....1698
- Pittsburgh....1698
- Philadelphia....1700
- Cincinnati....1701
- Cleveland....1701
- The German Iron Market....1702
- New York....1703
- Metal Market....1703

Iron and Industrial Stocks....1704
Labor Notes....1704
The Ten-Day Bond Customs Decision....1705
New Publication....1705
Auctioneering by Mail....1705
The Machinery Trade:
- New York Machinery Market....1706
- Chicago Machinery Market....1707
- Philadelphia Machinery Market....1708
- New England Machinery Market....1709
- Government Purchases....1710

Election of Tennessee Coal, Iron & Railroad Company Officers....1710
Trade Publications....1711
Hardware:
- Condition of Trade....1712
- Notes on Prices....1713
- "Pittsburgh Perfect" Galvanized Wire Nails....1715
- Trade Items....1715
- Sickels & Nutting Company....1716
- Price-Lists, Circulars, &c....1716
- Requests for Catalogues....1716
- Atlantic City Chosen for October Conventions....1716
- Touring Exhibit. Illustrated....1716
- The Wedge Chorus. Illustrated....1717
- Trade in Hawaii....1718
- Ontario Hardware Merchants Organize. Portraits....1720
- W. M. Sanford's Fiftieth Anniversary....1722
- The Conventions at Virginia Hot Springs....1722
- San Francisco Conditions....1722
- The Hardware Store of Neal & Brinker Company. Illus.1723
- Arkansas Hardware Convention....1724
- Ed. Ford on Trade Questions....1724
- Requests for Catalogues, &c....1725
- F. S. Banks & Co....1725
- J. Finley Smith & Son....1725
- Price-Lists, Circulars, &c....1725
- Miscellaneous Notes:
  - Pull Down Poles....1725
  - Bristol Steel Belt Lacing....1726
  - The Jacobs Chuck Company....1726
- Heavy Hammers, Track Tools, &c....1726
- Screwless Spring Set Shears and Scissors. Illustrated.1726
- The Greystone Chain Key Ring. Illustrated....1726
- The Universal Suit Hanger. Illustrated....1727
- Ely's Dandy Clothes Lifter and Drainer. Illustrated..1727
- Fruit Jar Top Straightener and Truer. Illustrated....1727
- Monitor Power Working Head. Illustrated....1727
- Surface Gauge No. 115. Illustrated....1728
- Wrought Truss Hitching Post. Illustrated....1728
- The Taylor Ventilating Window Fastener. Illustrated..1728
- Simplex Riveter. Illustrated....1728
- Falkenhainer's Superior Steel Barn Door Latch. Illus.1729
- Door Hasps and Locks. Illustrated....1729
- Current Hardware Prices....1730

Trade Publications.

Welding.—The Standard Welding Company, Cleveland, Ohio. Three pamphlets. Concern the work in three departments of the company. In Department A seamless steel tubing is made for all purposes. The corresponding pamphlet gives tables and price-list of standard sizes in which round tubing is made, and gives tables and information useful in connection with it. A price-list is also given of square tubing, and illustrations show examples of special shapes of tubes. In Department B seamless steel rims are made for all types of wheels and tires. The pamphlet on this subject shows various sections which have been standardized. In all of the tube and rim work the company undertakes special work to purchasers' specifications. The third pamphlet deals with the work of Department C, which is electric welding. A wide variety of examples of work done is illustrated. The process is often valuable in the making of parts which are too complicated to forge or machine from the solid.

Ship Protection.—The Long Arm System Company, Cleveland, Ohio. Bulletin 15. Has for its subject "The Preservation of Ships by the Long Arm System of Electrically Operated Watertight Doors." In lieu of a catalogue the company puts out a series of short talks on the principles of safety at sea and the conditions under which it can best be procured, with special reference to the important part played by watertight bulkheads and their doors in making a ship unsinkable.

Lathes.—J. J. McCabe, 14 Dey street, New York. Catalogue. Size, 7 x 10 inches; pages, 40. Devoted to McCabe's "2 in 1" double spindle lathes, in which a big and medium sized lathe are combined on one bed. The construction, part by part, is described in considerable detail, and some of the work done by the new style heavy pattern double spindle lathe is touched upon in the back of the catalogue, numerous engravings being given to show the tool in operation.

Belt Hooks.—Sawyer Belt Hook Company, Pawtucket, R. I. Price-list. Lists Sawyer clinching belt hooks, Sawyer-Wilson belt hooks, belt couplings, patent fasteners, and hatchet, axe and hammer wedges in the various patterns and sizes in which they are made.

Safety Valves.—Crosby Steam Gage & Valve Company, 16 Dey street, New York. Circular. Gives facts for the consideration of boiler makers and boiler owners, touching upon the necessity for a reliable pop safety valve. The claims of the Crosby pop safety valve are covered.

Railway Supplies.—Kalamazoo Railway Supply Company, Kalamazoo, Mich. Advance bulletin of catalogue No. 14. Size, 7 x 9 inches; pages, 40. The products covered include Kalamazoo improved pressed steel hand car wheels, hand cars, push cars, rail laying cars, tower hand cars, velocipede cars, cattle guards, jacks, Moore track drills, gauges, levels, water tanks, &c. The second page of the bulletin calls attention to the fact that the company has recently been completely reorganized, capital increased, plant enlarged and equipped with improved machinery, and the personnel of those in responsible charge of the work strengthened.

Electrical Apparatus.—General Electric Company, Schenectady, N. Y. Bulletins, flyers, &c. Bulletin 4432 deals with a prepayment attachment for Thomson recording wattmeters and high torque induction wattmeters, types CP and CP-2, and IP and IP-2; No. 4433, with rotary converters for railroad service, and 4435 with isolated plant switchboard panels with circuit breakers. Flyer No. 2174 is concerned with type RA speed regulating rheostats for machine control. Supply catalogue No. 7595 lists repair parts of GE-61-A and B railroad motors. Price-list No. 5143 lists General Electric measuring instruments. With the above were received indexes to bulletins, pamphlets, price-lists, supply catalogues and flyers in force up to the date of January, 1906.

Valves.—Western Tube Company, Kewanee, Ill. Circular. Describes the Eurema Y valves, which are made in three types—steam metal, iron body and high duty metal. A description of the second appeared in *The Iron Age* April 12, 1906.

Steam Traps.—Crane Company, Chicago, Ill. Advance circular No. 21. Illustrates Crane senior and Crane junior nonreturn steam traps suitable for all pressures from 1 to 200 pounds, sectional views being used to indicate the operation. Price-lists and capacities are given in tables. It also shows Crane sediment traps No. 990 for use in connection with steam traps, pump suctions, feed water lines, water meters, &c., suitable for working pressures up to 250 pounds.

Pipe Couplings and Fittings.—S. R. Dresser Mfg. Company, Bradford, Pa. Catalogue. Size, 5½ x 8½ inches; pages, 90. The main part of the catalogue is devoted to the company's specialties—pipe couplings, clamps, sleeves and fittings for wrought or cast iron pipe. Various patterns are illustrated and price-lists of the various sizes are given. The company also makes insulating couplings for preventing electrolytic action on pipe, and expansion and contraction sleeves for mending broken lines and collar clamps for stopping leaks in screw couplings. Interesting tests of the tightness of the joint and the insulating abilities of the insulating coupling are cited. The latter part of the catalogue deals with oil and gas well packers, casing heads, wall fasteners and rubber plugs.

HARDWARE

THE Massachusetts Bureau of Statistics of Labor recently published a report of what is said to be the first census of mercantile trade ever taken in a State and one that is not included in the United States census work. The number of mercantile establishments doing business in the State in 1904 was 29,045, and the total value of goods sold was $1,384,241,383. The total value sold in Boston was $967,009,354. Worcester was second, with $39,092,330, and Springfield third, with $31,329,128. Two other cities had a trade of more than $20,000,000, and eight others of more than $10,000,000. Twenty-eight towns reached figures between $1,000,000 and $10,000,000. Forty-six towns were between $500,000 and $1,000,000. In 112 towns the trade figured between $100,000 and $500,000. In 87 towns the business was less than $100,000. These figures go to show the enormous total of retail mercantile trade. What is true of Massachusetts is doubtless correspondingly true of other States of the Union.

Small matters may have an important influence on the reputation of a Hardware merchant to the point of making or losing customers, and nothing better illustrates this principle than the overcharging of customers on very small purchases. The man or woman who wants a small article to-day may be making a large purchase to-morrow, and a very unpleasant impression is created by anything that can be construed as extortion. An extra cent or two may be gained in the sale of a sheet of Sandpaper or a few Screws, but if the customer thinks he has been imposed upon it will be, so far as the merchant is concerned, another illustration of the old proverb, "Penny wise and pound foolish." No one blames a merchant for making all the money he legitimately can, but he never gains in the long run by permitting his clerks to make a penny on a small purchase which jeopardizes the larger sale later on. The transient customer, stranger or not, is a person to cultivate, to make a friend of. The business man who is charged 2 cents where he should have been charged 1 generally figures it out in percentage, and adding 100 per cent. to the regular price does not seem to him right. Of course, in small lots the customer should expect to pay more than on large lots, but much of the retail Hardware business is for small lots, and a fair profit having been determined upon, the price should be adhered to notwithstanding the opportunity now and then to make a little extra profit. It should be regarded as a serious violation of business proprieties to overcharge a customer even on a trifle. The merchant's standing and reputation in the judgment of the public will depend largely upon his practice in little matters such as this.

The approaching Hot Springs conventions will discuss a number of practical and important questions relating to existing conditions and tendencies in the trade. Among these is the matter of uniform freight classification, which, it is to be hoped, will receive the consideration which it deserves. While there are conflicting opinions in regard to many of the questions relating to freights and their regulation and the best methods of correcting prevalent evils, there is practical unanimity in deploring the diversity of classifications in the various parts of the country. While there are doubtless some difficulties in the way of the adoption of a uniform classification, they might doubtless be overcome or at least diminished by judicious and reasonable action. It is eminently proper that the subject should be taken up at the Hot Springs meeting, where the merchants of the South and the manufacturers of the North will be in joint conference, inasmuch as shippers into the Southern States and the merchants residing there experience a large measure of inconvenience and expense in consequence of the classification and attendant high rates of freight to which in many instances their goods are subjected. If the movement for a uniform classification should be inaugurated in Southern territory or by Southern commercial interests it would be an auspicious beginning.

Condition of Trade.

The approach of summer has not as yet made much impression on the market for Hardware and related lines. Indeed, although the quiet time of the year is at hand, business continues in substantially unabated volume and with even increased movement in certain lines. Some slight indications of a slackening in the demand which were noticeable from time to time have proved in large measure only spasmodic and temporary, as business has returned to its normal volume and resumed its strong and confident tone. At the present time, while the prospect of the crops is naturally carefully considered, as the yield of agricultural products has an exceedingly important influence on business conditions and the general prosperity, the matter is not regarded with as much solicitude as formerly, in view of the enormous increase in the acreage under cultivation and the diversity of products, making any failure in crops in a given territory of comparatively little importance when the interests of the whole country are considered. In the existing buoyant temper of the public, induced in part by the long continued prosperity enjoyed, there is, too, a disposition to take a cheerful view of the outlook and not borrow trouble on account of the possibility of anything adverse disturbing existing conditions. The activity of the railroads, while occasioning some inconvenience on account of delayed shipments and unsatisfactory service, is a striking evidence of the huge volume of current business, while their purchase of rails and material for future requirements reflects their confidence in the future, and at the same time has had not a little influence in keeping the market steady and strong. Without attempting to enter into the details of business, it is noticeable that in the Hardware field many goods are decidedly firm and in some instances hard to get. Season articles are also in large demand, with a scarcity developing here and there. Manufacturers continue to be in receipt of many orders from the jobbing trade and the larger retail houses which purchase their goods direct. The result is that manufacturers who are able to keep a stock in their warehouses from which orders can be promptly filled are exceptions to the general rule. Many goods are being diverted from channels into which they would otherwise have entered by shipments to the Pacific Coast, whose merchants have preference over those in other parts of the country, in view of their exceptional need and to aid them as much as possible in recovering from their almost unparalleled disaster.

Chicago.

The terrific pace maintained by the Hardware trade for more than a year shows no indication of abatement other than light, seasonable falling off in demand. The present consumption, judged from sales, shows a very

large increase over the same period a year ago, and manufacturers and jobbers see no signs of a waning of this unprecedented demand in the near future. The more conservative, however, claim to see breakers ahead in the optimism generally prevalent, and believe that the preparations that manufacturers are making for still further increases in the trade will be one of the many contributory influences that will lead to the demoralization of market conditions and prices. Throughout this section capacity is being increased as rapidly as possible, and many new corporations are entering various fields that are proving attractive on account of the general prosperity that prevails. It is a noteworthy fact, however, that not many are entering into the manufacture of the Hardware staple lines, as the competition among the large and wealthy manufacturers of these goods is keen, even during most prosperous eras, and profits are largely dependent upon devising improved methods of manufacture. A great many, however, are going into specialties and present conditions are unusually favorable to their introduction. In the Implement lines manufacturers generally are active, and are planning increases in their output for next year's consumption, ranging from 25 to 75 per cent. Contracts for the steel requirements during the year from July 1 already placed with the mills show an average increase over the last purchases of 25 per cent., and the steel manufacturers, whose equipments are already inadequate, are making additions to meet the increased requirements. Upon the crops future conditions largely depend, but other influences must be considered. The building boom, which promises to break last year's high record, cannot continue indefinitely, and manufacturers of all the numerous lines of Hardware directly affected naturally do not expect nor desire to continue to have their output sold months ahead. The natural growth of the country, however, is a potent factor for increased trade, and every slump has been followed by periods of increased consumption, showing a percentage increment over the last high point. The advance on Tin Plate announced last week was not wholly unexpected by the trade, owing to the meteoric flights of Pig Tin. Coincident with the announcement of this advance, however, the Pig Tin market started to decline, but even at the low points of the week Tin Plate manufacturers could only sell at a loss on the basis that had been prevailing. Sheet Zinc, on the other hand, suffered a slight decline in sympathy with the downward tendency of raw material. Jobbers report an increased demand for warm weather goods, owing to the hot spell that has prevailed throughout the West and Northwest during the past ten days. The demand for Wire Goods, on the other hand, is falling off and some unevenness in prices of Wire Goods is reported.

NOTES ON PRICES.

Wire Nails.—The market is in a generally good condition and distribution on contract orders by the mills is heavy. Demand from the Pacific Coast is large and is being promptly met, a preference being given to such orders over those from nearby trade whose requirements are less imperative. Quotations are as follows, f.o.b. Pittsburgh, plus actual freight to point of delivery, 60 days, or 2 per cent. discount for cash in ten days:

Carloads to jobbers	$1.85
Carload lots to retail merchants	1.90

New York.—Demand for small lots from store was quite steady up to the middle of this month, but since that time has been somewhat intermittent. Reports are to the effect that jobbers' prices are being maintained. Small lots from store are quoted on the basis of $2.15 per keg.

Chicago.—The volume of business that is being closed by the mills this month is greatly in excess of the same period a year ago, but notwithstanding this activity some concessions have been reported. The low prices which were made large distributers in the Texas territory for a few days have been withdrawn and a firmer basis has again been established. The movement of Wire Nails is very heavy and jobbers are unable to accumulate any stocks. The mill warehouses are likewise barren and prompt shipments on only a few sizes can be had. Quotations are firm but unchanged, as follows: $2 in car lots to jobbers and $2.05 in car lots to retailers, with an advance of 5 cents for less than car lots from mills.

Pittsburgh.—New orders for Wire Nails are very light, the mills running nearly all together on contracts on which buyers are specifying freely. Heavy shipments of Wire Nails are being made to San Francisco, as a very large number of temporary wooden buildings will be erected in that city until permanent structures are built. Prices are reported as being firm, as follows: Wire Nails, $1.85 in carloads to the large jobbing trade and $1.90 in carloads to retail merchants, f.o.b. Pittsburgh, plus actual freight to point of delivery, terms 60 days, less 2 per cent. off for cash in ten days.

Cut Nails.—The Cut Nail Association will hold a meeting on the 29th of this month. Filling specifications on contract orders represents the larger part of business being done by the mills. The market continues to show irregularities in price of 5 to 10 cents per keg less than official quotations, on carloads and larger quantities. Quotations are as follows: $1.75 to $1.80, base, for carload lots, f.o.b. Pittsburgh; $1.85 for less than carloads, f.o.b. Pittsburgh; $1.95 for carload lots, on dock, New York; $2 for less than carloads, on dock, New York. Iron Cut Nails at points west of Buffalo and Pittsburgh are held at 5 to 10 cents advance on Steel Cut Nails.

New York.—The demand for Cut Nails is about in the usual proportion to that for Wire Nails. No change has been made in jobbers' quotations, which are on the basis of $2.05 per keg.

Chicago.—Shipments on specifications continue heavy and a fair amount of new business is being taken, although competition has developed slight concessions in quotations. Quotations are as follows: Steel Cut Nails in car lots, $1.95; less than car lots, $2; Iron Cut Nails, $2.05 in car lots; less than car lots, $2.10.

Pittsburgh.—Conditions in the Cut Nail trade are unchanged from those noted in this report last week. New demand is light and the mills are fairly busy on contracts. The Cut Nail mills continue to limit output as nearly as possible to meet actual demand. Concessions of 5 to 10 cents a keg below official prices continue to be made for carloads and larger lots. We quote Cut Nails at $1.75 to $1.80, base, f.o.b. Pittsburgh, for carload lots, and $1.85 in less than carload lots. For Iron Cut Nails an advance of 10 cents per keg is charged.

Barb Wire.—Deliveries to railroad companies on specifications represent the bulk of the business done by mills. Quotations are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in ten days:

	Painted.	Galv.
Jobbers, carload lots	$2.00	$2.30
Retailers, carload lots	2.05	2.35
Retailers, less than carload lots	2.15	2.45

Chicago.—Sales are now limited almost entirely to small lots, the heavy purchases having been made earlier in the year. No improvement in demand is anticipated until early in the fall. The railroads continue to specify freely, however, and the mills are operating somewhat later than usual on this product. Quotations are firmly maintained, as follows: To jobbers, Chicago, car lots, Painted, $2.15; Galvanized, $2.45. To retailers, car lots, Painted, $2.20; Galvanized, $2.50. Retailers, less than car lots, Painted, $2.30; Galvanized, $2.60. Staples, Bright, in car lots to jobbers, $2.10; Galvanized, $2.40; car lots to retailers, 10 cents extra, with an additional 5 cents for less than car lots.

Pittsburgh.—The mills are running full, mostly on orders from the railroads. Demand from the Hardware trade is over for the season. Prices are reported as being firmly maintained, as follows: Painted Barb Wire, $2, and Galvanized, $2.30, in carload lots to the large jobbing trade, with the usual advance of $1 a ton to retailers in carload lots, f.o.b. Pittsburgh, 60 days, or 2 per cent. off for cash in ten days.

Smooth Fence Wire.—Telephone companies continue to be large purchasers, but demand from Fence manufacturers is about over for the season. Quotations are

as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in ten days:

Jobbers, carloads $1.70
Retailers, carloads 1.75

The foregoing prices are for base numbers, 6 to 9. The other numbers of Plain and Galvanized Wire take the usual advances, as follows:

	6 to 9	10	11	12&12½	13	14	15	16
Annealed	Base	$0.05	.10	.15	.25	.35	.45	.55
Galvanized	$0.30	.35	.40	.45	.55	.65	1.05	1.15

Chicago.—Specifications from Fence manufacturers have fallen off almost entirely as the fence season is practically at an end. Telephone companies are buying freely and industrial works continue to contract for their future wants. Prices continue to be well maintained as follows: To jobbers, $1.85, f.o.b. Chicago, in car lots, and car lots to retailers, $1.90.

Pittsburgh.—Heavy contracts are being placed for extended delivery, but demand from fence manufacturers is practically over. The mills have enough tonnage booked to keep them busy to July 1st or longer.

Quotations are as follows, f.ob. Pittsburgh, 60 days, or 2 per cent. discount for cash in ten days:

Jobbers, carloads $1.60
Retailers, carloads 1.75

The above prices are for base numbers, 6 to 9.

Sheet Zinc.—Under date of May 17 announcement is made of the reduced price of $7.65 per 100 pounds on Sheet Zinc in 600-pound casks, of the thickness from Nos. 9 to 22, inclusive, and of the widths from 32 to 58 inches, inclusive, and of the lengths from 72 to 96 inches, inclusive; delivered f.o.b. cars, La Salle, Ill. This price is subject to discounts as follow:

	Cash with order. Per cent.	Quantity. Per cent.	Total. Per cent
Carload lots	3	5	8
9000-pound lots	3	3	6
6000-pound lots	3	1	4
Less than 3000 pounds	3	0	3

In connection with this revised price, the following extras, which it will be noted are different from those previously in force, are announced:

Extras in Cents Per 100 Pounds.

	Nos. 5.	6.	7.	8.	9-20.
32 to 40 x 84	50	25	15	10	None.
24 x 84	80	25	15	10	None.
26 x 84	95	25	15	10	None.
28 x 84	90	75	50	35	None.
30 x 84	80	65	45	30	None.
48 x 84	80	25	15	10	None.
50 x 84	85	25	15	10	None.
52 x 84	95	25	15	10	None.
60 x 84	175	80	45	15	20
36 x 96	70	30	20	10	None.
48 x 96	105	65	20	10	None.
36 x 108	65	45	30	20	None.
48 x 108	130	75	20	15	None.
62 x 84 } Extra given on application.					
64 x 84 }					

The extra on No. 4 36 x 84 is $1.20 per 100 pounds.
The extra on No. 3 36 x 84 is $2.80 per 100 pounds.
Price on No. 2 will be given on application.

Extra Charges for Small Packages and for Selected Zinc.

100-pound casks (all Nos. up to No. 12, inclusive), 15 cents per 100 pounds.
100-pound boxes (not larger than 30 x 40 inches), 15 cents per 100 pounds.
200 and 300 pound casks (all Nos. up to No. 14, inclusive), 10 cents per 100 pounds.
200 and 300 pound boxes (not larger than 36 x 50 inches), 10 cents per 100 pounds.
Orders for a less quantity than 400 pounds are subject to an extra charge of 20 cents per 100 pounds.

Bolts and Nuts.—If the past few weeks have shown a falling off of business in Bolts and Nuts most manufacturers have been glad of the opportunity to catch up on their back contracts. A renewal of the demand is now reported from many quarters, and the difficulty of getting goods promptly, which has been characteristic of the market throughout the spring, bids fair to be intensified. Important producers state that they are still weeks behind their orders, an assertion which seems to be fully borne out by the experience of the trade. At a meeting of the associated manufacturers, held last week, established prices, which have now been in force for some months, were reaffirmed. It is understood that these prices are being very well maintained by members of the association and that cutting by outside makers is of little importance.

Washers.—It is reported that prices on Wrought Washers are showing some irregularity, due in the main to underselling on the part of manufacturers outside the association. There are a number of small producers in this line whose output is in the aggregate sufficient to make itself felt in the market. Larger manufacturers are said to be somewhat dissatisfied with the situation, which was the subject of discussion at their monthly meeting, held in this city last week. It is not yet certain, however, what action they will take in the matter. The market on Washers to retail merchants may be represented in a general way by the quotation of from 5.8 to 5.9 cents off the list, although under the present conditions close buyers and the larger merchants can obtain somewhat lower figures.

Vitrified Sewer Pipe.—The American Sewer Pipe Company, Pittsburgh, Pa., has advanced prices on Standard Pipe and Fittings, 2 to 24 inches, in the following territories: Maryland, Delaware and eastern Pennsylvania; western Pennsylvania and West Virginia; Ohio, Michigan and Kentucky. Following are the present discounts in carload lots for the various territories:

New England	68%
New York and New Jersey	71%
Maryland, Delaware and Eastern Pennsylvania	73%
Western Pennsylvania and West Virginia	75%
Virginia	76%
Ohio, Michigan and Kentucky	75%
Indiana	77%

Bright Wire Goods.—The price of Bright Wire Goods, which has been firm and unusually well maintained during the past four months, has again been advanced by the manufacturers, who are apparently working in entire agreement. Prices are, however, being cut to a greater or less extent by jobbers, who have stocks purchased at lower figures. In this way retail merchants are enabled to buy at prices equal to, and even below, the extreme discounts of the manufacturers. The latter assert that this condition of affairs cannot last long, and that jobbers will only be able to replace their stocks by paying the advanced prices.

Asbestos.—The market for Asbestos Mill Board products is an open one and has been sice late last week. The price had been 6 2-3 cents per pound for less than 5000 pound lots, and 5 cents per pound for larger quantities. There has developed some friction among manufacturers, which so far seems to be confined to mill board in thicknesses of 3-32 inch and greater, and sizes 40 x 40 inches and larger. The prices named by different interests vary widely, and range from 4 cents per pound down to 3 4-10, 3¼ cents, and even 3 cents per pound, and even that figure is said to be shaded, although it is not confirmed. Reputable manufacturers say mill board sold at the low figure named above is business taken at a loss. It would probably be difficult to get spot deliveries in appreciable quantities, as some makers refer to the pressure on their plants in the production of other forms of asbestos material.

Copper Wire.—Bare Copper Wire is still maintained at an advance over base prices current last month, a representative quotation being to-day 20¼ cents per pound in car lots and 20 3-10 cents per pound in less quantities. The terms are 30 days net and ½ of 1 per cent. discount for cash in 10 days. At the same time it may be said that there is some of this material obtainable a shade lower than the figures here given. Other Copper and Brass products based on Ingot Copper remain substantially as they have been.

Mrs. Potts' Irons.—The price of Mrs. Potts' Cold Handle Sad Irons was advanced last week from 3 cents per set to 5 cents per set of three Irons, with handle and stand, on those having tinned tops, above the rate for japanned tops. The reason given for the increase of 2 cents per set is the greater cost of pig tin.

Bale Ties.—Some irregularity in the price of Bale Ties has been reported, especially in the South and Southwest. It is understood, however, that this irregularity has been to a good extent corrected and the market is referred to as having returned to its normal condition.

Pumps.—One indication of improvement in the Pump market is the general recognition on the part of manufacturers that conditions are unsatisfactory and existing prices unprofitable. There is, however, as yet little definite improvement to note. One or two manufacturers are refusing to sell at the extreme prices which are current. There has also been some conference between the leading producers, but without definite action, further than to take under formal consideration some plan for the betterment of the business. In view of the continued strength of the market for raw material and the fact that prices now current yield little if any profit it is not improbable that an advance will be made in the near future. Most of the manufacturers, having orders that cover the greater part of their production during the present season, would of course get but little immediate advantage from such change in price.

Binder Twine.—The situation of the Sisal fiber market indicates that this commodity is not likely to be higher this season, and that manufacturers of Twine who buy now will get fiber a a lower price than has ruled for at least two years. Comparatively little new business is being done, and reported quotations for lots of less than 5 tons range from 9¼ to 9¾ cents per pound.

Rope.—Demand continues fair and quotations without change. Jute products are firm and are considered relatively higher than Sisal, considering the desirability of each. Manila Rope continues firm. Although Sisal fiber has reached a low point, manufacturers have not bought large quantities at the low prices, and would naturally sustain a loss if they sold Sisal Rope on the basis of the present cost of fiber. Quotations remain unchanged, as follows: Pure Manila, 12½ cents; B quality, 11½ cents; Pure Sisal, 9½ cents; No. 2 quality, 8 cents per pound.

Window Glass.—There is a movement on foot to have all hand blown Glass factories close down by June 9, as it is estimated that there is enough Glass in manufacturers' and jobbers' hands to meet the demand until next fall. It is considered doubtful by some that whether all the factories will be closed before the last of June, the production of Glass will gradually decrease by smaller quantity than can be made during the hot weather and by the closing down of individual factories from time to time. According to reports demand from the Pacific Coast is beginning to show itself. Jobbers' quotations are as follows: Eastern district, 90 and 10 per cent. discount for all sizes of single and double strength; New York City, 90 and 10 and 5 per cent. discount for all sizes of single and double strength.

Linseed Oil.—A reduction in the price of Oil of 1 cent, on the basis of former quotations, was made last week by the crushers. Demand is sluggish for small lots, while large buyers are not anticipating their wants on a declining market. Shipments on contract orders are in good volume, but the receipt of this lower priced Oil is having a rather depressing effect upon the market. Quotations are as follows: City Raw, 41 to 42 cents per gallon; out of town Raw, 38 to 39 cents per gallon. Boiled Oil is 1 to 2 cents per gallon advance over Raw.

Spirits Turpentine.—Since last week's report in these columns, the price of Turpentine has dropped 5½ cents per gallon. The sharp decline is attributed by some to large consignments from other points to Savannah, while others think that large interests are depressing the market. Some indications had pointed to a lower market, but the pronounced drop caused surprise. It is reported that all offerings at Savannah has been taken on the basis of 57 cents for Machine Made Barrels. New York quotations are unchanged, as follows, according to quantity: Oil Barrels, 61 to 61½ cents; Machine Made Barrels, 61½ to 62 cents per gallon.

F. A. Amsberry has opened a new retail Hardware store in Mason City, Neb.

"PITTSBURGH PERFECT" GALVANIZED WIRE NAILS

THE PITTSBURGH STEEL COMPANY, Pittsburgh, with Rod, Wire and Wire Nail mills at Monessen, Pa., has recently installed machinery for the manufacture of Galvanized Wire Nails, for which special claims are made. The equipment is up to date in every respect, including patented machinery for cooling the Nails after galvanizing without submerging in water. The galvanizing is done by the hot-dipped process, and only the best grades of Spelter are used. The Nails as thus made are referred to as absolutely rustproof.

TRADE ITEMS.

THE HAMDEN MFG. COMPANY, Wallingford, Conn., successor to W. A. Ives & Co., has just made a change in its style, and will hereafter be known as the W. A. Ives Mfg. Company. The Boring Implement business of this company is one of the very oldest in the country, having been established 95 years ago. Since moving into new quarters the company has thrice enlarged its plant, and another large addition is contemplated July first.

ARROW CAN COMPANY, 35 Warren street, New York, manufacturer of the Arrow Ash Can and various pressed metal specialties, has just executed an order for 400 Umbrella Cans, 36 x 10¼ inches, made of galvanized sheet iron, for the use of the Keep Dry Company, New York. They were made of galvanized sheet steel with hinged top cover and provided with hasp and staple for padlock with which to secure a stock of umbrellas located in numerous hotels, drug stores, barber shops and kindred places, where the holder of a metal check can get an umbrella instantly on presentation of check, which for an annual fee of $1 entitles the possessor to an umbrella in time of need on request. The company is also at work on the new sizes of Arrow Ash and Garbage Cans, which it expects soon to put on the market.

JOHN B. FOLEY, Syracuse, N. Y., secretary of the New York State Retail Hardware Association, has lately circularized the members in regard to measures in the interest of the catalogue and mail order houses which are being urged at Washington. The injury which the enactment of these measures into laws would work to the welfare of retail merchants in all parts of the country is pointed out, and the members of the association are admonished to make their protests in writing to the national legislators, who are specially charged with the consideration of the projects to which attention is called.

THE CITY HARDWARE COMPANY, Anniston, Ala., is erecting a new building for the manufacture of its Harness line. It is a two story brick structure, 50 x 100 feet, and is in the immediate rear of the company's main storeroom, where Hardware, Mill Supplies, Buggies, Wagons, Agricultural Implements, &c., are carried at wholesale and retail.

ROBERT C. BIALY, formerly of Bay City, Mich., has withdrawn from the Wells & Nellegar Company, Chicago, with whom he has been associated.

GEORGE RICARDO, who has been established for many years at 195 Water street, New York, has just removed his business around the corner to 22 Burling slip. He makes a specialty of repairing and grinding Lawn Mowers of all styles and sizes, both hand and power varieties, renewing as occasion requires lost, broken or worn out parts. He is also the manufacturer of a Power Lawn Mower Grinder for sharpening uniformly and evenly on an emery wheel Mower Blades at a correct bevel. It is his purpose to put on the market for next season's business a new Mower Grinder, moderately priced, that can be operated by hand power, where steam or other motive power is not available.

ROBERT F. HALL of Wallingford, Conn., about July 1, will open up as a manufacturers' agent in Portland, Ore. Mr. Hall has been in the Eastern manufacturers' agency business for the past ten years and will be pleased to hear from manufacturers who desire representation in a part or all of Pacific Coast territory, on a salary or commission basis, with copies of catalogues, price-lists, &c.

SICKELS & NUTTING COMPANY.

A SPECIAL MEETING of the Board of Directors of the Sickels & Nutting Company, 35 Barclay street, New York, was held May 15, at which J. R. Loder was chosen president and treasurer, owing to the recent death of Robert Sickels, the late president. The Board of Directors as now constituted consists of J. R. Loder, Otto Dederer, E. C. Hamilton (recently elected), B. E. Randolph and J. K. Eldredge, the latter being vice-president. The secretary is Thomas Burrows. The business is being conducted now, as it has been practically for the last six or eight years, by the men who have grown up in the establishment and worked their way from the bottom and are now in their prime. Mr. Loder bought the most of Mr. Sickels' interest last October. He entered the firm of Louderback, Gilbert & Co., then in Park row, on March 6, 1871, and has filled almost all the various positions in the house from errand boy up. He traveled for the house from May, 1880, to January 1, 1906. The business dates back to 1848, when the title was Whittifield, Cohu & Co., becoming Mooney, Cohu & Co. in 1859 and Louderback, Gilbert & Co. in 1863, Gilbert, Sweet & Lyon in 1888, and Sickels, Sweet & Lyon in 1890-97, when the business was incorporated as the Sickels & Nutting Company, as now known.

PRICE-LISTS, CIRCULARS, &c.

HAGEY STOVE COMPANY, 1122-1128 South Twelfth street, St. Louis, Mo.: Catalogue of Hagey King Wood Heaters, which are shown in different styles and sizes.

WALKER MFG. COMPANY, Council Bluffs, Iowa: Printed matter relating to Disc Furrow Opener, Stock Fountain, Disc and Coulter Sharpeners, Five Minute Washing Machine and Hay Windrower.

ALLITH MFG. COMPANY, Chicago: Catalogue of Door Hangers, Fire Door Fixtures, Stove Ladders and Merchandise Carriers. Special catalogue of Fire Door Fixtures.

REQUEST FOR CATALOGUES.

FROM SPETNAGEL HARDWARE COMPANY, Chillicothe, Ohio, which, beginning May 1, is doing an exclusively wholesale business, having discontinued its retail department. The company desires to receive from manufacturers catalogues, price-lists, &c., with jobbers' quotations to which it is thus entitled.

FROM HARDY HARDWARE COMPANY, Scotland Neck, N. C., whose entire stock of Hardware was destroyed by fire on the night of the 16th inst. The company's collection of catalogues, price lists, etc., was also consumed.

FROM W. E. ENGLISH, who has purchased the interest of G. E. Kelly in the firm of Kelly & English, in Huron, Kan. The stock includes Shelf and Heavy Hardware, Stoves, Tinware, Agricultural Implements, Paints, Oils, Athletic Goods, Furniture, Wagons and Carriages.

FROM GOODE-O'STEEN HARDWARE COMPANY, Florence, Ala., which has been organized to deal in Shelf and Heavy Hardware, Mill Supplies, Harness and Saddlery. The company intends to take up Agricultural Implements later.

ATLANTIC CITY CHOSEN FOR OCTOBER CONVENTIONS.

AFTER the Virginia Hot Springs joint conventions in June the next great gathering of the trade will be at Atlantic City, N. J., where it has just been decided to hold the annual conventions of the American Hardware Manufacturers' Association and the National Hardware Association on October 17, 18 and 19. The meetings will be held at the Marlborough-Blenheim, one of the very largest and most elegant hotels in the country. Correspondence in regard to accommodations, which may be had on the American or European plan, should be conducted direct with the hotel management.

TOURING EXHIBIT.

L. & I. J. WHITE COMPANY, Buffalo, N. Y., with New York office at 45 Centre street, has prepared what is termed a touring exhibit, which is illustrated herewith. The case is about 10 feet high by 8 feet wide, and provides an especially handsome display of complete

L. & I. J. White Company's Touring Exhibit.

lines of the company's Carpenters' Tools, Ship Carpenters' Tools, Coopers' Tools, Butchers' Tools and Ice Tools. The case is being sent to different places for exhibition in well-known Hardware stores and is also intended to be shown at the conventions of the trade. Wherever exhibited it has had the effect of stimulating the demand for the products of the company.

JAMES L. NEEFUS, formerly at 46 Dey street, New York, has taken new quarters at 103 Reade street, near Church street. He represents for New York and vicinity and export a number of concerns, among which are the following: Lapamy, Howlett Company, Butcher Post Hole Digger; Lincoln-Williams Twist Drill Company, Bay State Tap & Die Company; Goodell Mfg. Company, Miter Boxes; Chisholm & Moore Mfg. Company, Hoists and Blocks; Michigan Sprocket Chain Company, Link Chain and Sprockets; Cobb & Drew, Spring Cutters and Keys; F. E. Kohler & Co., Shovels, Scoops and Post Hole Diggers; Globe Mfg. Company, Nails, Brads and Pins; Curtin-Herbert Mfg. Company, Emery Wheel Dressers and Cutters; Charles A. Hastings Company, Dynamo and Motor Compounds; Empire Implement Mfg. Company, Tool Grinders; Cumberland Steel Company, Shafting; Monarch Electric & Wire Company, Wire Strand, and Wetmore Iron Works, Pumps.

HUGHSON & MERTON, San Francisco Hardware merchants, are now permanently located at 318 Market street, their temporary offices having been at 3844 Clay street. It is their purpose to erect a building shortly on the Market street site now occupied by them. The firm believe themselves to be the first to erect a business house in San Francisco after the fire. They advise us that orders for staple goods are coming in very freely to San Francisco now, and that the city is taking on the appearance of a mining camp; full of tents and wooden structures. People are coming back who left temporarily to get away from the trouble, and the street cars are practically all running.

THE WEDGE CHORUS.

NORVELL-SHAPLEIGH HARDWARE COMPANY, St. Louis, has a method of keeping in touch with its salesmen which seems calculated to produce excellent results. We reproduce herewith a cut (reduced) and extracts from a recent circular or printed letter from the company to its traveling force. The illustration is entitled "The Wedge Chorus" and its idea will be readily apprehended after observing the labels of the different wedges set in the great log "The Trade," which are ready to be driven home by the athletic looking salesman swinging his "Energy Hammer." It will be noted that an entering wedge of "Good Service and Right Prices" has already been driven in by the house. The names which appear are those of the heads of the departments referred to. The different wedges are represented as appealing to the salesman to hit them quick, hit them often and drive them deep. Each is imbued with a highly developed idea of its own importance, which so far from being a disadvantage, in this case rather increases the effectiveness of the wedge.

The spirited claims for pre-eminence and the earnest pleas for salesmen's attention and effort given in the body of the circular are not only clever, entertaining and enthusiastic enough to command the attention and stir the blood of any live salesman, but they contain many ideas and suggestions, crisply expressed, which are almost universal in their application and may be read with profit by every Hardware merchant. Each of the wedges makes an appeal to the salesmen to drive it in, mentioning in some detail, but in a bright and suggestive way, a good many of the leading goods in the line, thus emphasizing the variety and quality of the Diamond Edge goods which are offered to the trade. Our space will not permit us to give more than the following brief extracts of a very general character, which will certainly be found interesting and suggestive:

ENERGY HAMMER
S NORVELL PRESIDENT
T F WOOD B B O'BRIEN MAIL ORDERS
F C STEVENS CONQUEROR SHOVELS
F C MEYER BUTLERED HARDWARE
FRED B MATHIS
W B WILLIS SPORTING GOODS
EUGENE L JOHNSON HOUSE FURNISHING GOODS
GEO T SPRAKE TOOLS
LEONARD MATTHEWS JR CUTLERY DEPT
GOOD SERVICE AND RIGHT PRICES
THE TRADE
SALESMEN 147 VARIETIES
THIS CASE IS FULL OF DIAMONDS

The Wedge Chorus.

Cutlery Wedge.

LEONARD MATTHEWS, JR.

Mr. Salesman, please drive me deep. Sell me first while the customer is fresh. Don't wait until he is all tired out. A tired merchant seldom buys Cutlery. Just think of those Diamond Edge Razors! You should have a line in every town. Then that Magnetic Razor is a good seller. Do all your customers know about our Magnetic Razors? If not, get busy.

What's the use of our getting up all these new lines if you don't show them to our good friends, the retail dealers? When we turn on the electric current be a good conductor; don't ground the wire. A salesman who does not show his samples is a bad conductor; he kills all our efforts. He grounds the current.

Just one final prayer: Have you shown all your customers our new Diamond Edge Kitchen Knife? It sells on sight. Hit me again!

Tool Wedge.

GEORGE T. SPRAKE.

My line is the roast beef and potatoes of our business. Cutlery is like ice cream and cake; it is a nice thing to have, but you can get along without it. Hit me hard! No salesman has his business on the right foundation unless he sells my line. Hit me again!

Take a whirl at Diamond Edge Hatchets. The best Hatchet for the money on the market. If your customers love you sell them these Hatchets.

Then those fancy Hammers. How they do sell! Put up one in a box. Handsome enough to be used as ornaments in the parlor. In these days when mechanics are getting high wages they want fancy tools—you bet!

House Furnishing Goods Wedge.

EUGENE L. JOHNSON.

Now you have struck a department that is worth while. If it wasn't for my department we wouldn't have anything to eat—nothing to cook things in. Has it ever occurred to you that the ladies are buying most of the Hardware these days? Every woman is the purchasing agent for her family. A Hardware dealer who does not cater to women's trade is making a big mistake. Women talk a heap and they are great advertisers.

If you would lay out a line of that Blue Diamond Ware in the hotel sample room and leave town for a week, when you came back you would find orders written up and stuck under the door. Just give the trade a chance to see that line. Of course your customers are not mind readers. They cannot tell what is in your sample cases as long as they are locked up. Neither can they tell what is in your head or in your catalogue unless you open up.

People to-day are not performing surgical operations on men's heads to find out what there is in them.

Yes, my dear brother, a Lead Pencil is a very small thing, but put a Lead Pencil in the hands of the right man and it will move the world. If you cannot sell Lead Pencils to your customers, give them away. After they have once used a Norvell-Shapleigh Lead Pencil they will never use anything else.

Then there is that Carpenter's Lead Pencil of ours. It is just what carpenters want—flat, so it won't roll, but if it does happen to fall among the shavings it is made of the right color so it can be easily seen. Did you know, Mr. New Salesman, why Carpenters' Pencils are made flat and colored red?

Bicycle Wedge.

FRED. B. MATHIS.

A lot of jobbers have gone out of the Bicycle line. This is a good thing; it leaves more business for other jobbers, like ourselves, who have stayed in. The Bicycle business is far from being a dead issue. In every good town there is somebody selling Bicycles. Of course, if you do not look up that somebody you are liable to gather the impression that the Bicycle business is out of date. Our line of Rugby and Shapleigh Special Bicycles is just as good as ever. We carry a large and complete stock.

We are very strong on Sundries. This is the best part of the business. Some men sell a single Bicycle, but seem to forget that the Bicycle itself is a small end of the business. If you have ever owned a Bicycle and figured up your Bicycle repair bills you will realize the truth of this statement.

Most of our salesmen, anyway, learn about all they know from their customers—a little bit from this customer, a little bit from the next, and then when you meet the third you tell him all about what the first two have told you, and he will wonder at the knowledge you have accumulated about your business.

Paints—nobody knows anything about Paints. You cannot tell a thing about the quality of Paint until it has been on a house a year. Selling Paint is simply a matter of confidence. This house has carried the same make of Paint for many, many years. We have never had one single complaint. This is good enough for us.

Mail Order Wedge.

T. FRANK WOOD; B. B. O'BRIEN.

We are not saying much, but we are sawing wood. If you will drive in the other wedges, the mail order wedge will take care of itself. We find where a salesman has a good, big business himself, we always have a good mail order business from

that territory. Mail order business follows the salesman's business. Therefore, the best way for you to help the mail order department is to sell all the goods you can yourself. Don't worry about us. When the finish comes you will find our wedge driven in deep.

Sporting Goods Wedge.

W. B. WILLIS.

This is the only real department in the house. A man may sell Hardware to make a living, but he sells Sporting Goods from pure love of the line. When you find a man who does not like Sporting Goods, watch him. There is a screw loose in his make up.

Fishing Tackle—the spring days are with us, and the philosopher sits on a log and watches the cork. It is enough to make one go on a strike when he thinks of all the good fishing places there are in this world. What's the use, anyway—the harder we work and the more money we make the more poor relations we find who are willing to divide. Suppose we all go fishing? Then there is the Diamond Steel Rod, the Ultra Casting Line, the Diamond Snelled Hooks. All these things smell of the forest and the stream. The subject is too tempting; one is liable to take a week off.

Therefore I turn to Revolvers. What a beautiful line we have! The way we sell Revolvers it isn't surprising that the papers are full of murders. It is strange that a civilized nation should permit Revolvers to be sold, but as long as the trade wants them we must sell them. When we get rich enough and independent enough we propose to close entirely out of Revolvers and start a campaign against them. I suppose the papers must have something to write about, and so every day we read of the Gun that was not loaded and all about the flowers at the funeral. Push Revolvers. The country is becoming too thickly populated anyhow.

Builders' Hardware Wedge.

FRED. C. MEYER.

Of course, if you are not posted on Builders' Hardware and do not know how to talk the line, your customers will buy direct from the manufacturers whose salesmen are posted. The trouble is not with our line or with our prices, but is often with the salesman himself—he does not know enough to make the right impression on the customer. If you are in this class, wake up. On your next trip to St. Louis come to me and I will give you a day of my time. A good way to learn the line on the road is to try to sell the biggest Builders' Hardware dealer in your territory. Try to sell him just to get the education. I did this once and surprised myself by selling some goods; I did not have any idea I could. Don't be afraid. Fear belongs to the Middle Ages. In modern times we have banished fear along with the personal devil, hell and a few other trimmings of that nature. These scarecrows were enough to keep the people in line in the fifteenth century.

The President's Wedge.

S. NORVELL.

What I like to see are large accounts. Some salesmen understand the art of selling dealers the lion's share of their goods; other salesmen simply go around and "tease." The best way to get big accounts is to drive in wedges. Convince your customer it is to his interest to buy first one line from you, then another line. Never ask a man for all his business—that immediately arouses a certain amount of opposition in his mind—but by the character of your goods, your service and your prices convince him it is to his interest to buy more lines from you, and then you will have the big end of his business without asking for it. Don't you see the point? Don't call on a man and say, "I want all your business this year." Call and show him a certain line of goods. When you have got him on that line, show him another. Selling is a science; it must be done scientifically.

If you will devote your time and attention to all the good points in your line, you won't have any time in which to tell hard luck stories, or be melancholy or down-in-the-mouth. You won't have time to roast your house or your competitors. Therefore, my advice to every salesman is to concentrate his energies upon those things which will produce the best results. Cut out everything that does not count; and among those things that do not count are fear, gossip, envy, jealousy, malice, suspicion and superstition. Come out and live in the sunshine. Do you know that sunshine kills almost every known microbe? No matter what happens, look pleasant. If you feel blue, run up an alley and work the corners of your mouth into a smile before going into a customer's store. No man can be a good salesman unless he is an optimist. It takes a pessimist to be a buyer.

Let yourself loose. Take off the bridle of your ideas. Do something! It is better to do something, even if it is full of errors, than to do nothing for fear of making a mistake. Action is life—inaction is death and decay.

The Pfaffin-Manke Hardware Company, La Crosse, Wis., has been incorporated by William Pfaffin, Emil C. Manke and Bertha Manke, with a capital stock of $5000.

John H. Botten, Troy, Idaho, has added to his line Agricultural Implements, Wall Paper and Crockery. He is occupying a new brick building, 40 x 75 feet in size.

TRADE IN HAWAII.

We are in receipt of the following interesting advices in regard to trade in the Hawaiian Islands from John L. Sardy of John L. Sardy & Co., Snow Hill, London, E. C., England, who is now making a business trip around the world:

PREVIOUS to annexation business between the United States and the Hawaiian Islands was not so closely allied as it is now. In the past the importing firms in the islands and the manufacturers in the United States considered it necessary to pass orders through commission houses in San Francisco or New York. Things have changed. The Territory of Hawaii, U. S. A., and the merchants thereof are now dealing with their own countrymen and plainly show the desire and intention to have these dealings quite as direct as between a buyer in a Western State and a manufacturer in an Eastern one. And why not? The conditions are practically the same and the methods of doing business thoroughly American, touched, however, with a certain Far Eastern element on account of the Chinese merchant, a man of business par excellence.

A Chinese Episode.

As an instance, an American traveler representing a harness Hardware firm was stopped by a Chinaman in a street in Honolulu and asked to make an appointment to show the Hardware firm's samples. The traveler looked upon the Chinaman askance. He gauged him by his appearance, and took him for a coolie, but, American-like, made the appointment with the result that the Chinese harness maker not only placed an order amounting to close on to $4000, but at the same time handed the traveler a check for the entire amount, which shows that a fat bank account is not always indicated by the owner's clothes or nationality.

At the same time discretion must be used in doing business direct with Chinese or Japanese dealers. The local American firms in the main handle this business themselves, and the traveler representing the manufacturer makes a grave mistake in being so greedy as to take orders from the American merchant and then going to the merchant's customer and soliciting business.

It must be borne in mind that although the buying capacity of the islands is large Honolulu, the distributing town, is small and the merchants have had their own methods of doing business for years. They do not like to have these methods interfered with, and although they are always pleased to see and politely receive the representatives of an American manufacturer they are decidedly opposed to indiscriminate meddling on the part of an inexperienced traveler.

Now and then a few German travelers come to the islands, but aside from this the rest are

Practically All American

and of these the greater part from San Francisco. When the islands became United States territory the hotels were soon filled with commercial men in quest of business, but as usual in such cases anticipation soon faded into disappointment. The merchants had heavy stocks on hand, Hardware alone amounting to perhaps $1,500,000 in value. This was before the days of the cable between the coast and the islands, when it took 30 to 40 days to get even a reply to an order and a longer period than now to actually obtain delivery of shipment, as there were fewer steamers, hence considering the market immense stocks were carried.

Hawaiians Read and Write English.

Apparently some manufacturers in the United States think the people of these islands are foreigners. More than once letters have been received by merchants stating that a copy of catalogue was being sent and regreting that it was only issued in the English language. Spanish catalogues are frequently sent. Little do they know that Hawaiian children were being educated in the English language before California became a State. Furthermore, Governor Pacheco, one of the first Governors of California, received his education at Lenaina Luna Seminary on the Island of Maui, one of the seven islands forming the group. There is not a Hawaiian in the islands who cannot read and write, if not in English at

any rate in the native language. This is due to the New England missionary of bygone days, from whom descended that white element now forming the backbone of the country and exerting the best interests of the entire white community over the natives, an influence which teaches them to obey the laws, fear God and pay their debts.

A Great Sugar Country.

The sugar world owes the engineers of Hawaii a great debt, for in no other place in the universe is sugar so scientifically made as in these islands. Hawaiians can boast of having in operation the only 12 roller sugar mill in the world, as well as the largest sugar plants in existence, and are obtaining greater results in the extraction of the sucrose of the cane than any other cane sugar producing country, having reached as high as 97 per cent. of sucrose.

This large 12-roller mill was made in the islands by the Honolulu Iron Works, including the construction of the boilers, fittings and vacuum pans, excluding only engines, centrifugals and small stock pumps. These works are equipped with modern up to date machinery, the whole plant costing upward of $1,000,000.

Pig Iron from Germany.

Pig iron is of course rather extensively used in the islands, but it may be a matter of surprise to learn that a great deal of it is imported from Germany, coming as ballast on vessels partly loaded with fertilizers for the islands. In this way it can be landed here duty paid at a lower cost than American iron, a situation which the merchants are not slow in taking advantage of.

Galvanized iron sheets are also being imported from England and Germany at an advantage over the American price, notwithstanding the duty.

Tin Can Manufacture.

A good deal of interest is taken in the American plant now being erected here for the manufacture of tin cans, mainly for the pineapple industry, a product which is assuming large proportions and should add materially to the resources of the islands, as the Hawaiian pine is creating a special market for itself.

At present building operations are slack here, so far as business structures are concerned, hence a reduced demand for Builders' Hardware.

Honolulu Overbuilt Itself

in the last five years, a number of large stores having been constructed, to say nothing of the magnificent Alexander Young Building, in which is situated the large modern hotel bearing the same name. This structure is said to have cost about one and a half million dollars and would be a credit to any large American city—even New York itself. The steel contract alone amounted to about $150,000 and was placed with Milliken Brothers, New York. The stone work consists of Calousa sandstone from California.

There Is a Steady Growth

in the construction of small dwelling houses or bungalows built of wood. These picturesque houses, surrounded by stately palms and lofty cocoanut trees, are dotted all over the place for miles and miles around Honolulu, extending as far as the mountain of Tantalus and the famous Pali, the former eight and the latter six miles from town.

There are about half a dozen large

Hardware Establishments

in Honolulu, all of them modern and equipped with ample and up to date stocks, about 95 per cent. of which is American, the remainder being English cutlery and German cheap wares. The buyers in these houses are well posted, courteous and attend to business in a thoroughly American way. Accounts can be opened with safety, payments being promptly attended to and advantage taken of cash discounts. At least two of these establishments do a general merchandise business of over $2,000,000 each annually, but, strange to say, neither one of them is American, one being an English and the other a German house. With these two exceptions all the leading firms are American, excepting, of course, the Chinese, Japanese and Portugese traders.

In this connection it may not be amiss to point out that the traveler visiting these islands will find himself in the midst of a thoroughly patriotic American community, a patriotism instilled in the early days by the sturdy New England missionaries, and we all know what that means, from the time of Bunker Hill down.

Among the Public Buildings

mention should be made of the Executive Building, formerly the palace of King Kalakua, inclosed in 5 acres of tropical growth, and the Judiciary Building, erected during the monarchy and constructed of molded concrete blocks, the same material being used in the construction of the Royal Hawaiian Hotel and the old Post Office, which is evidence of the fact that the Hawaiian architect of those days was ahead of our own architects of 30 years ago, who now are advocating the use of these very same concrete blocks.

The Railroad Equipment

of the islands comprises the Oahu Railroad & Land Company's line, operating 75 miles, 3 foot gauge, in the Island of Oahu, on which Honolulu is situated. This line connects with the following sugar plantations: Honolulu, Oahu, Ewa, Waialnae, Wailua, Kahuku and Laiae. J. B. Castle has a survey party in the field for an extension line from Laiae plantation, a distance of about 30 miles. Besides the Oahu line, the sugar planters have their own lines in operation on the plantations, aggregating in permanent track about 75 miles.

American Plows Unsuitable.

As noted above, preference is given to American goods of all kinds—in fact, our manufacturers have always had the lead here, but a notable exception is the steam plow. Every plantation uses the Fowler plow, made in England. Each plow outfit consists of two traction engines, with winding drums, operating the plow back and forth by means of a cable. Not alone are the engines made in England, but also the plows. The larger plantations use from six to eight plowing outfits, each single set costing about $15,000.

The American steam plowmaker has failed to meet the requirements of the planters, and thus loses the business, although he is protected by a heavy duty. One American maker sent a plowing set here at one time, but it was found absolutely unsuitable for sugar plantation work on the Islands.

The locomotives and railroad equipment on the plantations are all of American construction.

The trade in the Islands, of course, depends on sugar. Thirty years ago the total value of the sugar crop was somewhat under $1,250,000; last year it was over $35,000,000. On the plantations

All Sorts of Manufactured Goods

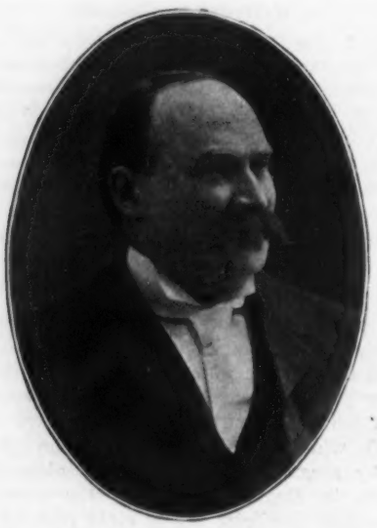
are used, of which American Hardware forms a very considerable part. The total value of iron and steel products brought into the Islands last year was over $1,200,000, being only $200,000 less than breadstuffs, standing at the top of the list, with Hardware next. The value of shipments from the Islands is nearly three times greater than the value of merchandise bought, last year showing something over $36,000,000 in shipments, against somewhat more than $14,000,000 in purchases. This looks healthy, and it really would be so were it not that about $10,000,000 are paid annually in wages to Japanese coolies, who send the bulk of this sum to Japan instead of spending the money where they earn it.

The People of the Islands Are Aggrieved

by the application of the United States Coasting laws to territory over 2000 miles distant from the coast, and it would appear justly so. Under the present law, should a passenger embark here on a vessel say from the Orient, touching at Honolulu, for San Francisco, he is compelled to pay $200 in addition to the regular fare unless the vessel flies the American flag. This is a hardship, but worse than all is the law absolutely preventing the shipment of freight unless carried in American bottoms. This is not liked by our fellow countrymen in the Territory of Hawaii, U. S. A.

ONTARIO HARDWARE MERCHANTS ORGANIZE.

NOTWITHSTANDING the success of the Hardware Associations in the United States, bound together by a strong national organization and by the mutual insurance feature, the Hardware merchants of Ontario, Canada, have remained unorganized. Trade evils were plenty, but there lacked the force that was required to move the stone out of its bed of moss and start it rolling down the hill. Four years ago an effort was made to organize the trade, but the Toronto merchants who were behind the move found it difficult to enlist the active support of the dealers in the smaller places. Weak as the organization was it did good work, and indiscriminate selling of Paints by manufacturers, price cutting and other evils were temporarily stopped. The organization,



A. W. HUMPHRIES, President.

however, was induced to cast in its lot with the Retail Merchants' Association, becoming the Hardware section of that body, and from this time onward the organization became of lesser and lesser value to the trade, finally discontinuing its activity altogether.

Two years ago the dealers in Manitoba and the Northwest provinces got together at Winnipeg and organized the Western Hardware and Stove Dealers' Association, a year ago engaging a traveler, J. E. McRobie, to devote his entire time to the work of organization, the association having a permanent office at Winnipeg. While Canadian laws have so far prevented the establishment of a Hardware Merchants' Mutual Insurance Company, the association has done good work in prevailing upon jobbers to discontinue selling Hardware lines to general merchants and others who have been selling Hardware at cost as a bait to catch grocery and dry goods trade. Matters of legislation have also been watched closely, and active opposition is now being given to a demand made by a new association of postmasters that they be allowed to compile lists of persons receiving mail at their offices and dispose of them to mail order houses, patent medicine concerns, &c.

The good work of the Western Association has been an inspiration to many in other Canadian provinces, and for a year or more a quiet agitation has been conducted in Ontario having in view the organization of an association. Matters came to a head in March, when A. W. Humphries, Parkhill, Ontario, offered to take the initiative in calling a convention. Others came forward and subsequently a meeting was held in Toronto, at which more than a score of merchants were present. Full discussion was had of the evils which beset the carrying on of the Hardware business in Ontario, and most of those present reported in favor of forming a Retail Hardware and Stove Dealers' Association, although some exception was taken by representatives present from the Retail Merchants' Association, who desired the body to become a Hardware section and work with the grocers, druggists and other sections of their association. The opinion of the meeting was almost unanimously against this proposition and in favor of a distinct Hardware and Stove organization similar to the associations in the United States. As the Retail Merchants' Association, however, claimed to have 150 Hardware merchants in their organization, it was decided to leave the matter open until another meeting, on May 15 and 16, at Toronto.

Last Week's Meeting.

This meeting was successful in all respects, and it was almost unanimously determined to form an exclusively Hardware Association. The roll call showed the following merchants in attendance:

A. W. Humphries, Parkhill.
John Caslor, Toronto.
J. R. Hambly, Barrie.
D. A. Macnab, Orillia.
D. E. McDonald, Florence.
Fred. A. Brewer, Parkhill.
J. F. Norton, Ingersoll.
C. F. Morehouse, Toronto.
J. Walton Peart, St. Marys.
W. G. Scott, Mount Forest.
H. Becker, New Hamburg.
W. B. Clifton, Alliston.
R. Redlam, Jarvis.
F. W. Jeffery, Midland.
W. Holborn, Sutton West.
Fred. W. Otton, Barrie.
C. E. Noble, Dundalk.
Albert Wideman, Markham.
Chas. E. Jones, Uxbridge.
J. W. Peacock, Toronto.
George Nunn, Toronto.
A. Welch & Son, Toronto.
G. E. Rudd, Guelph.
John Coffey, Barrie.
W. I. Wagg, Providence Bay.
Jas. Dandie, Streetsville.
W. J. Geddes, Embro.
M. R. Marshall, Dunnville.
W. F. Moser, Blyth.
Chas. W. Conn, Tillsonburg.
E. P. Paulin, Goderich.
D. McGregor, Caledonia.
A. E. Nichols, Fergus.
E. S. Hubbell, Thamesville.
Jas. Lochead, Forest.
A. E. Bottum, Bobcaygeon.
D. Brocklebank, Arthur.
J. S. Hall, Toronto.
Robert Smith, Bolton.
R. H. Thornhill, Mount Forest.
Wm. Conrad, Waterloo.
Jas. Wilson, Thorold.
Thos. Fullerton, Monkton.
V. D. McPherson, Woodville.
John Bailes, Oshawa.
O. M. Hodson, Bolton.
Robt. Smith, Bolton.
Mr. French, Clysdale & French, Caledonia.

Membership.

These members comprise less than half the number already enrolled, and, considering that less than four weeks before the convention not one Hardware merchant had paid his fee into the association, the report made by Secretary Wrigley that 120 members had been enrolled before the close of the convention, 112 of whom had paid their membership fees, was exceedingly gratifying to the officers and delegates to the convention. Over 80 towns and cities are represented on the membership roll, Eastern Ontario not being so well represented as the western and northern parts of the Province. The large number of

W. G. SCOTT, First Vice-President.

members enrolled is remarkable also, as it was secured despite the active opposition of the Retail Merchants' Association, an organization composed of all classes of merchants, but chiefly grocers, druggists and general storekeepers. The attendance of about 50 delegates, not including trade press representatives, travelers, &c., in such a busy season as the middle of May, indicates the earnestness with which the trade in Ontario has taken up the question of trade organization.

The Executive Committee's report, giving the privilege of the floor to all Hardware or Stove dealers, refusing to admit proxies and allowing only paid-up members to vote, brought out a lengthy discussion, the representatives of the Retail Merchants' Association present being disappointed in not being able to control the convention with their bunch of proxies. They were given an opportunity of airing their views, but their tactics in retarding the work of the convention became objectionable, and

J. R. HAMBLY, Second Vice-President.

when a vote was finally taken it was decided, by a vote of 34 to 1, to remain as a purely Hardware and Stove Dealers' Association, not affiliating with the Retail Merchants' Association in any way.

Following the selection of committees on by-laws and constitution, finance, resolutions, legislation, trade grievances and mutual insurance, interesting addresses were delivered by E. R. Rogers, Toronto Junction, on "Why We Should Be Friendly with Our Competitors"; F. W. Otton of Barrie on "Handling Goods Without Profit," and by H. N. Joy, Toronto, on "Stove Salesmanship."

WESTON WRIGLEY, Secretary.

Mr. Joy is a Canadian who spent several years in the United States, having been president of the Retail Hardware Association of North Dakota. He is now manufacturing malleable iron ranges in Toronto.

Committee Reports.

The Resolutions Committee reported as follows:

Resolved, That this association will not purchase goods from a wholesale house that supplies goods to fairs, auction sales rooms, mechanics, contractors, factories and mills, with goods handled in a general Hardware store.

Resolved, That the matter of cartage from shipping point charged on freight bills be taken up by this association.

Resolved, That this association take steps to prevent the wholesale prices of Hardware being published in the general newspapers.

Resolved, That this association make friendly overtures to the Retail Merchants' Association with a view to affiliation for mutual benefits; hoping, notwithstanding the animosity shown, that on further consideration they will understand why it was necessary that we have an association controlled by Hardwaremen only.

The report was discussed, clause by clause, and referred to the Executive Committee for action.

The Constitution and By-Laws Committee presented a very brief set of laws, the chief points being the adoption of a $3 membership fee, with a $2 assessment if required; an annual convention in March, and an Executive Committee of six members, in addition to the five officers. The preamble follows:

The objects of the Ontario Retail Hardware and Stove Dealers' Association are primarily to promote, foster and encourage the formation of a strong Provincial Association in Ontario through the medium of which local retail Hardware and Stove dealers may be brought into closer sympathy one with another, where the annoyances or grievances peculiar to each particular locality may by concert of action through its provincial association be adjusted or eliminated, and for the more satisfactory adjustment of matters of general interest to the trade with respect to legislation, insurance, freight rates and all questions

JOHN CASLOR, Treasurer.

the better arrangement of which would tend to the mutual advantage of its members.

The Committee on Legislation recommended petitioning the Legislature to amend the statute law and abolish the exemptions in section 180 of the Division Court act so far as to make small accounts up to $5 collectible by garnishment by a procedure in the Magistrate's Court similar to that for the collection of claims for wages, the prosecutor to serve the summons in the case without charge. The report was adopted and the Executive Committee given instructions to act.

The Finance Committee recommended that an organizer be continued in the field until such time as the executive deem advisable and that the sum of $20 be paid the secretary, Mr. Wrigley, as a slight mark of appreciation for his active services in organizing this convention. The recommendations were concurred in by the convention.

The Trade Grievance Committee presented an interesting report covering various evils requiring adjustment, and the report was referrd to the Executive Committee.

The Mutual Insurance Committee was instructed to bring in a report at the next convention.

Election of Officers.

The following officers were elected by acclamation:

PRESIDENT, A. W. Humphries, Parkhill.
FIRST VICE-PRESIDENT, W. G. Scott, Mt. Forest.
SECOND VICE-PRESIDENT, J. R. Hambly, Barrie.
TREASURER, John Caslor, Toronto.
SECRETARY, Weston Wrigley, Toronto.
EXECUTIVE COMMITTEE: D. Brocklebank, Arthur; M. R. Marshall, Dunnville; J. Walton Peart, St. Marys; E. P. Paulin,

Goderich, F. W. Jeffery, Midland; Frank Taylor, Carleton Place.

AUDITORS: J. W. Peacock, Toronto; C. F. Morehouse, Toronto.

Another Meeting in September.

The association decided to hold a special convention in Toronto in September, and Organizer O. M. Hodson, Bolton, was instructed to continue his good work, he offering to act for a time on a simple guarantee of traveling expense, with no salary.

Delegates Banqueted.

One of the most enjoyable features of the gathering was a dinner tendered the delegates and representatives of the jobbing houses on Tuesday evening by Col. J. B. MacLean, publisher of *Hardware and Metal*, whose editor, Mr. Wrigley, had been chiefly instrumental in organizing the association. About 80 guests sat down at the banquet table and were during an evening of solid enjoyment given an opportunity of getting better acquainted with each other.

W. M. SANFORD'S FIFTIETH ANNIVERSARY.

WILLIAM MITCHELL SANFORD of Hannibal Green's Son & Co., Troy, N. Y., wholesale and retail merchants in iron, steel and Heavy Hardware, celebrated the fiftieth anniversary of his connection with the firm on May 19. Mr. Sanford was born in Bennington, Vt., October 7, 1838, leaving home in search of employment January 19, 1852. After several experiences, one of which was in a general country store, with an agreement for three years' work at an annual salary, with board, of $25, $50 and $75, respectively (from which he obtained a release in 18 months by the payment of $50), he entered the service of Hannibal Green, at Troy. His duties began with dusting, errand running, &c., from which he was promoted to shipping clerk and traveling salesman, finally becoming general manager of the extensive business done by the firm. Since the death of Hannibal Green, in March, 1875, Mr. Sanford has had entire charge of the business, with sales extending from Maine to California and into Canada, the Hawaiian Islands and even to the Philippines. Mr. Sanford is a trustee of the Troy Savings Bank and has declined directorships in three of the Troy National banks in order to give his entire attention to the business. He is a life member of at least eight Masonic bodies in Troy and is a thirty-second degree Mason.

The house of Hannibal Green's Son & Co. was established in 1809 by Henry Nazro and Jacob Hart as Hart & Nazro, which became successively Craft, Hart & Pitcher, Nazro, Thurber & Green, Nazro & Green in 1834, Green & Cramer, 1838, and Hannibal Green in 1852. After the death of Mr. Green the firm became Hannibal Green's Son & Co., composed of Edward M. Green and William M. Sanford.

Mr. Sanford, who has vigorous health, mental and physical, continues in active direction of the business with the building up of which he has been so prominently identified, and in the enjoyment of the success he has achieved and the high regard in which he is held.

L. BEST COMPANY, 45 Vesey street, New York, is headquarters for almost everything in the line of abrasives and polishing materials, a stock aggregating about 25,000 wheels of standard sizes being kept on hand always from which to execute hurry orders. Included in the line are Emery and Corundum Wheels, which run wet or dry; Sterling and Safety Wire Web Emery and Corundum Wheels, a large stock of Emery Grinding and Polishing Machinery and Supplies and Polishers' Materials, genuine Huntington Emery Wheel Dressers, pure Turkish Emery, Diamond Tools, &c. A grinding machine, electrically operated, is also set up on the premises for practical demonstration of various kinds of wheels, so that on short notice a wheel having a special bevel or shape can be improvised at once, by means of a Diamond tool, as well as showing the qualities of various kinds and sizes for any kind of work to a "want to know" customer. A new illustrated catalogue of 96 pages has just been issued by the company.

THE CONVENTIONS AT VIRGINIA HOT SPRINGS.

THE joint programme for the conventions of the American Hardware Manufacturers' Association and Southern Hardware Jobbers' Association, which will be held simultaneously at Hot Springs, Va., on June 12, 13, 14 and 15, has been determined, and indicates that a good deal of attention and time will be devoted to matters of practical interest and benefit. Both associations will have a number of executive sessions at which only the members of each will be present, but there will be three joint sessions on Tuesday, Wednesday and Thursday afternoons, in which both manufacturers and jobbers will participate. At the joint session on Wednesday a discussion of "The Effects of Quantity Differentials," will be had, W. W. Webber of the Webber-Ayers Hardware Company, Fort Smith, Ark., introducing the subject on behalf of the jobbers. Another interesting topic at this session will be "Uniform Freight Classification." At the Thursday afternoon joint session the "Integrity of Contracts" will be the principal theme of discussion. Alfred Sang of the Garland Nut & Rivet Company, Pittsburgh, will inaugurate the discussion from the manufacturers' standpoint, while Chas. H. Ireland of the Odell Hardware Company, Greensboro, N. C., will make the opening address for the jobbers. Other features of this session will be addresses by E. M. Bush, Evansville, Ind., president of the National Retail Hardware Association, and by J. H. Kennedy, editor of the *Hardware Dealers' Magazine*, New York, the latter's subject being "The Best Business in the World." Among the formal topics of discussion at the executive sessions of the jobbers will be "Increased Expenses Demand Increased Profits," "Trade Courtesies Due a Competitor," introduced by H. M. Price of H. M. Price & Co., Mobile, Ala.; "Best Methods of Posting Traveling Men," introduced by W. L. Sanford of Roberts, Sanford & Taylor Company, Sherman, Texas; "Advantages and Disadvantages of Direct Shipments," introduced by F. L. Scott of the Scott Hardware Company, Paducah, Ky., and "Backbone—an Essential Element." The address of welcome at the initial joint session on Tuesday will be delivered by J. T. McAllister of Hot Springs. This will be a social rather than a business session, so that the address of S. G. Gilfillan of the Belfont Iron Works Company, Ironton, Ohio, on "Good Fellowship" will come in very appropriately.

SAN FRANCISCO CONDITIONS.

THE GEORGE F. EBERHARD COMPANY, which before the catastrophe in San Francisco was at 12-14 Drumm street, in that city, has advised us that it is now receiving mail at rooms 3, 5 and 7 Barker Block, Berkeley, Cal., a suburb of San Francisco. We are also informed by the company that its financial responsibility is unimpaired and its organization of experienced salesmen handling the company's selling and introductory work for Eastern manufacturers to the Hardware, Paint and general trade is going to be maintained and the business continued and enlarged. An introductory campaign for the Dover Mfg. Company has just been finished, and the company is now ready to take up and push some other staple line. Reference is made to prominent manufacturers as to its ability and the completeness of organization for the distribution and sale of a manufacturer's product on the Pacific Coast.

Holbrook, Merrill & Stetson, San Francisco, announce that their vaults have been opened and books and records found in excellent condition.

Dunham, Carrigan & Hayden Company, whose present headquarters in San Francisco are at 131-153 Kansas street, are erecting additional temporary warehouses in that neighborhood, having already one there, which is in the same section of the city as that to which the Pacific Hardware & Steel Company moved last August, in occupying its immense new quarters, which were uninjured by the fire. This territory is near one of the terminals of the Southern Pacific Railroad and conveniently located for receiving supplies under present conditions. The company is clearing its site of débris, pending preparations for rebuilding on its own property.

The Hardware Store of Neal & Brinker Company.

EIGHTH ARTICLE.

CONTINUING the description of methods of showing and accommodating goods in the Hardware store of Neal & Brinker Company, New York, attention may be called to the numerous cases and cabinets, especially constructed to contain certain extensive lines. In the preceding article the wall cases, with sliding glass doors, near the entrance of the store, were referred to and illustrations were given of the Tools therein displayed. Adjoining one of these cases is a cabinet, with swinging glass door, devoted to samples of Machinists' Tools, Fig.

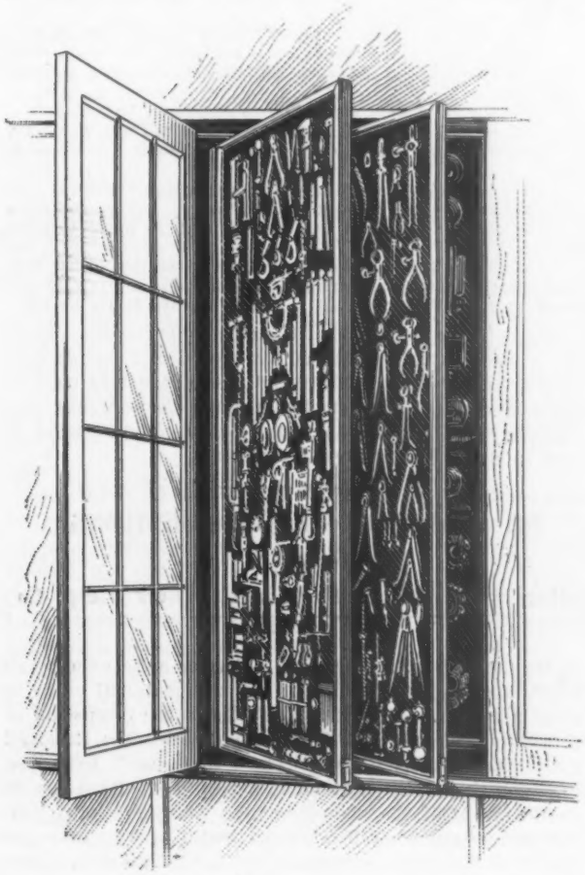


Fig. 53.—Wall Cabinet Containing Samples of Machinists' Tools on Swinging Boards.

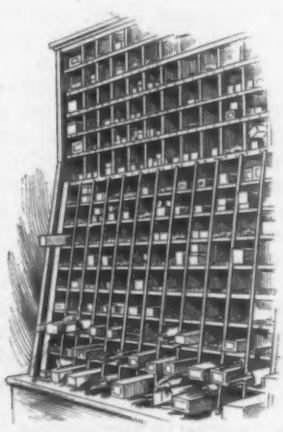


Fig. 54.—Method of Accommodating Files in Cabinet Built Into the Shelving.

53. The cabinet contains three sample boards, covered with black cloth, on which the Tools are symmetrically arranged. In general it may be said that each board is given up to the line of one manufacturer. The boards swing out like the door of the cabinet, and when closed are held in place by small brass bolts, as indicated in the cut.

Files are kept in the section of shelving illustrated in Fig. 54. A space about 6 feet wide and 4 feet high is divided into compartments 3½ inches wide by 3½ inches high. The rack thus formed inclines outward at the base so as to afford sufficient depth for the larger sizes.

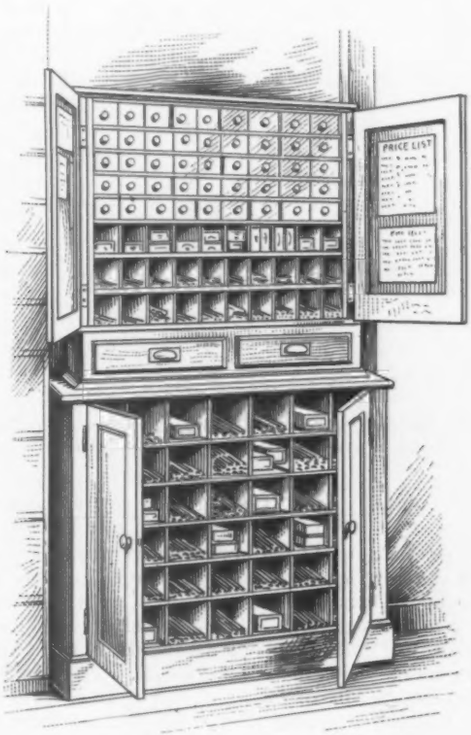


Fig. 55.—Cabinets Containing Twist Drills.

Different classes of Files, as Flat, Mill, Half-Round, &c., are grouped together and arranged according to size, classes and sizes being plainly marked on the partition edges.

Two cabinets for Twist Drills are shown in Fig. 55. The upper and smaller one is about 34 inches wide by 30 inches high. It is divided into drawers and compartments about 2¾ inches wide by 3½ inches high, containing the smaller sizes of Drills. The lower cabinet is about 36 x 40 inches and its compartments are 3 x 3½ inches,

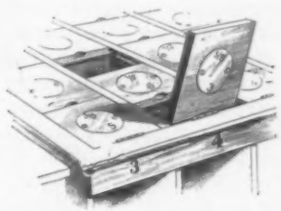


Fig. 56.—Screw Boxes in Top of Counter.

containing larger Drills, both loose and in manufacturers' boxes. Price-lists are tacked on the inside of the doors of the cabinets.

A Special Counter

is built in the center of the first floor for the accommodation of Screws and Nails. Two views are given, Fig. 56 illustrating the Screw boxes on the top and Fig. 57 the Nail bins, which make a double row along the sides. The counter is about 12 feet long by 3 feet wide, and besides

serving its main purpose also affords a convenient space for occasional use. The Screw boxes are about 3½ x 4¾ inches and 4 inches deep; there are 27 rows of 6 boxes each. Fourteen rows at one end of the counter are devoted to Flat Head Bright, the next seven rows to Flat Head Brass and the next six rows, running to the other end of the counter, to Round Head Brass. Each box contains one size, indicated by a brass disk on the cover, on which the figures are stamped as shown in the cut. An excellent scheme was devised to prevent the covers of the boxes from being removed or getting misplaced. The covers of the outer row are hinged, while the other covers slide back and forth in grooves. Thus they must always remain in their proper order and can only be moved when the outer or hinged cover is open. The Nail bins,

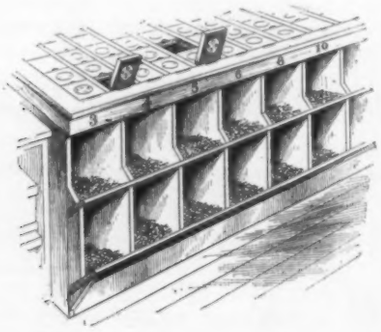


Fig. 57.—Special Counter for Nails and Screws, Wire Nails in the Upper Row of Bins, Cut Nails in the Lower.

as before stated, are built in a double row on both sides of the counter. The number of the penny indicated on the upper bin governs the lower bin as well, which contains a different kind of Nail. On one side of the counter the upper bins contain common Wire Nails and the lower common Cut Nails. The other side has Wire and Cut Finishing Nails, similarly arranged. A few bins are also reserved for Staples and Dowels. The mouths of the bins are about a foot square, having an upward slope at the bottom, as shown in the cut, which makes them much more effective as containers, preventing the Nails from falling out of their proper bins into the wrong bins or onto the floor.

(To be continued.)

ARKANSAS HARDWARE CONVENTION.

THE programme for the seventh annual convention of the Arkansas Retail Hardware Association, at Little Rock, on June 5, 6 and 7, provides for a meeting which should prove exceptionally interesting and instructive. A feature of the convention will be an illustrated discussion of good salesmanship, in which certain members of the association, as well as salesmen representing prominent manufacturing and jobbing concerns, will participate. This discussion will have special reference to approved methods of selling Pocket Cutlery, Holiday Goods, Paints, Stoves and Cultivators, but the principles set forth will be suggestive in connection with the sale of many other lines. Among the papers to be read and discussed during the meeting will be the following: "Why Our Association Should Take More Interest in Hardware Mutual Fire Insurance," by John M. Pittman, Prescott; "How to Secure New Business," by W. L. Jeter, Jonesboro; "Some Problems of the Hardwareman and Suggestions as to Their Solution," by John A. Plummer, Marianna; "The Relation of the Retail Merchant to the Jobber," by W. T. Oberst, Blytheville, and "The Matter of Freight Rates," by John B. Brown, Van Buren. M. L. Corey, Argos, Ind., secretary of the National Retail Hardware Association, will participate in the work of the convention, and will make an address on "New Issues." Under the head of "Question Box" the following topics, among others, will come up for discussion at the different sessions:

Does it pay to borrow money to discount bills?

Do you give personal attention to marking goods, or leave it to clerks?

How should we meet the competition of cheap counters, racket stores, &c.?

How can the retail merchant use the rural telephone to best advantage? Does it pay to help build up this service?

How can we make rural free delivery help the local merchant?

Is it a good business proposition to sell Stoves on the terms adopted by some of our city dealers, $1 down and $1 per week?

Does it pay a Hardwareman to display 5 and 10 cent articles in his store?

Is it good business policy to make concessions in prices to farmers' clubs on staple articles?

Does it pay to cut the established price on a standard article in order to hold business?

What are the leading characteristics of a good salesman?

Can a strictly Hardware business succeed, under the present conditions of trade, or should we add side lines in order to make a success?

How can we prevent the selling to consumers by jobbers?

How can we best control merchants in other lines, who order Hardware supplies and turn them over to their customers at cost?

What is the best way to meet the competition of general merchants who have bargain counters of Tinware, Cutlery and other articles of Hardware, and sell them at cost, in order to draw trade?

What is the best way to keep grocery stores and lumber companies from selling such articles as Screen Wire, Tinware and other seasonable articles that belong to the Hardware trade?

It is thus apparent that the officers of the association have made arrangements which should call out a large attendance of the members and insure a useful convention. Charles E. Taylor, Little Rock, the energetic secretary of the association, will be pleased to respond to any inquiries concerning the meeting.

ED. FORD ON TRADE QUESTIONS.

Letter No. 6.

Hardware Associations and Their Help to Members.

To the Editor: As stated in a former article the retail Hardware associations are of great educational value to their members. An evidence of this is the discussion of timely topics such as "What Are the Benefits Received From Discounting Bills?" The "live ones" will soon convince the others that no merchant can afford not to avail himself of the cash discount. The progressive jobber, manufacturer and catalogue house always take the benefit of the cash discounts, if but ½ of 1 per cent. Two per cent. cash discount in ten days on goods that net 30 days, means 2 per cent. interest on the money for 20 days or the same as 36½ per cent. annual interest. Two per cent. cash discount ten days on goods that net 60 days equals 14 3-5 per cent. annual interest.

On goods that carry a 1 per cent. ten day cash discount net 30 days the merchant can afford to borrow money at 18¼ per cent. annual interest and keep his credit high. A merchant who cannot borrow at much lower rates than noted above is certainly an "easy mark" for the catalogue house, and no one but the "dealers" can afford to lose so large a profit.

THE FREIGHT QUESTION

has also been aired and much light shed on it. The figuring of costs, freights, &c., is too often guessed at. A successful merchant must know how much his goods cost and what the freight amounts to; the adding of 2, 5 or 10 per cent. for freights to an assorted invoice of Hardware is as primitive as the methods of our pilgrim fathers. I know retailers who formerly added 10 per cent. to invoice as cost of all goods, and so marked them. How far would 10 per cent. carry Wheelbarrows, Churns, Washing Machines, &c.? Yet on Cutlery, &c., 10 per cent. would cover freight New York to the Pacific Coast and back. Do jobbers figure their freights and costs in this way? Not if they expect to be in business five years hence.

ANTAGONIZING THE JOBBERS.

If the retailers form stock companies as proposed with ample buying capital to do syndicate buying will they not become jobbers? If so will they not be antagonizing their loyal supporters? Will not the jobbers feel they have assisted in building up a more direct competitor than they did when building up the catalogue houses in an early day?

BUSINESS NOT RECREATION.

At the annual meetings the grievances of the members, whether real or imaginary, are discussed, and ways and means suggested for the betterment of trade conditions, and the meetings are not now what were termed by some in their earlier days a "round of dissipation," and even *The Iron Age*, as late as three years ago, criticised the jobbers and manufacturers for devoting more time to recreation than to the business they were supposed to give their attention to.

There has been a decided change of late and I think all who have given this subject serious consideration believe that the associations are of inestimable value not only to members but to all who are interested in the retailing of Hardware in any way, and as I have repeatedly stated *every retail merchant and "dealer"* should join his State association and if not an active worker at least lend his name and influence.

THE INSURANCE FEATURE ALONE,

which is now past the experimental stage and managed by able, honest and conservative business men who are not looking for graft or private gain but rather to give the members the very best protection at a minimum cost, brings direct cash returns to its members, to say nothing of the many advantages directly and indirectly gained therefrom.

In conclusion pardon me for again referring to the importance of co-operation with manufacturers, jobbers and the trade press. ED. FORD.

REQUESTS FOR CATALOGUES, &c.

The trade is given an opportunity in this column to request from manufacturers price-lists, catalogues, quotations, &c., relating to general lines of goods.

REQUESTS for catalogues, price-lists, quotations, &c., have been received from the following houses, with whom manufacturers may desire to communicate:

FROM S. P. GROAT & Co., who have opened a new retail Hardware store in Broken Bow, Neb. They will carry a stock of Shelf and Heavy Hardware, Stoves, Tinware, Paints, Oils, Furniture and Queensware.

FROM MANASSA HARDWARE COMPANY, which has put in a complete retail stock of Hardware in Manassa, Cal. The company carries Shelf and Heavy Hardware, Stoves, Tinware, Agricultural Implements, Paints, Oils and Sporting Goods.

F. S. BANKS & CO.

F. S. BANKS & CO., formerly at 90 Wall street, New York, have just located in new and more accessible quarters for the trade, at 73 Warren street. Their business has been and is now largely with the United States Government, especially with the Army and Navy Departments, to which they furnish supplies, as well as to the Panama Canal Commission, for canal purposes. The firm also represents as direct selling agents D. Round & Son, Cleveland, Ohio, Hoists, Winches and Cranes; C. E. Bonner Mfg. Company, Chrisman, Ill., Victor Reversible Chain Wrench and Pliers; American Tap & Die Company, Thread Cutting Tools, Butchers' Tools and Scales, and Van De Sandt Mfg. Company, Lubricating Grease and Boiler Compounds.

J. FINLEY SMITH & SON.

J. FINLEY SMITH & SON, formerly at 118 Chambers street, New York, for the purpose of largely increasing their stock carrying facilities, as well as permitting the installation of a much larger sample room, have moved to 117 Chambers street. They are now in possession of the entire first floor, one flight up, 25 x 88 feet, with a particularly high ceiling, making available much room for shelves. The increased space enables them to carry in stock a full assortment of their brush products from which the general trade in this vicinity can supply themselves, thus insuring adequate and prompt service. The brushes of this concern are made in their own factories at Essex, N. J., and Tremont and Van Nest, N. Y., and include the many kinds of House Furnishing, Horse, Toilet and Paint Brushes.

PRICE-LISTS, CIRCULARS, &c.

Manufacturers in Hardware and related lines are requested to send us copies of catalogues, price-lists, &c., for our catalogue department in New York; and at the same time to call our attention to any new goods or additions to their lines, of which appropriate mention will be made, besides the brief reference to the catalogue or price-list in this column.

THE CASSADY-FAIRBANK MFG. COMPANY, 6106-6130 La Salle street, Chicago, Ill.: Illustrated catalogue and price-list devoted to Nut Cracks and Picks, Screw Drivers, Towel and Hat and Coat Racks, Kitchen Articles, Stove Pokers, Tracing Wheels, Curling Irons, Steel Wall Brackets, &c.

HAMMACHER, SCHLEMMER & Co., Fourth avenue and Thirteenth street, New York: Illustrated descriptive circular of their Tourist Autokit and Carpenter Tool Outfits for home use.

SYRACUSE TWIST DRILL COMPANY, Syracuse, N. Y.: Price-list No. 105, referring to Drills, Nail Sets, Punches, Screw Driver Bits, Reamers, Countersinks, &c.

STARKS EDSON & Co., Saxtons River, Vt.: Booklet referring to Albamural Hot Water Paint, Mineralba and Exterior Cold Water paints, Victory Wall Finish, &c., with directions for use.

SAFETY FIRE EXTINGUISHER COMPANY, 29-33 West Forty-second street, New York: Booklet entitled "Better Fire Protection," referring to Safety Fire Bucket Tanks.

NATIONAL MFG. COMPANY, Sterling, Ill.: Catalogue of Door Hangers, Latches and Pulls, Door Rail, Strap and T Hinges, Hasps and Staples, Butts, Hooks and Eyes, Coat and Hat and Hammock Hooks and other wrought specialties.

E. C. TECKTONIUS MFG. COMPANY, Racine, Wis.: Catalogue of Band Lugs for Tanks and Kilns, Defective Circular Chimneys, &c.; also circular referring to Tecktonius Pole Supports and Bolster Springs.

SHELBY STEEL TUBE COMPANY, Pittsburgh, Pa.: Price-list No. 15, of Seamless Tubing for mechanical purposes, with list of uses to which it is put, tables of gauges, weights, &c., and other general information of value to users.

NATIONAL FEED BOX COMPANY, Detroit, Mich.: Illustrated matter relating to Feed Boxes, which are recommended for colicky horses and those which scatter their oats.

THE CRANE SPRING STEEL FENCE COMPANY, Cleveland, Ohio: Catalogue of the Crane Spring Steel Fencing, in a number of styles, and Fence Stretchers. The company also builds Square Mesh Fence Looms for manufacturers outside the Cleveland district.

ROLLMAN MFG. COMPANY, Mount Joy, Pa.: Catalogue No. 1160, devoted to Meat and Food Choppers, Peanut Butter Machines and Spice Mills, Cherry Seeders, Apple Cutters, Peach Stoners and Potato Cutters.

THE HUMPHRYES MFG. COMPANY, Mansfield, Ohio: Illustrated price-list of Porcelain Enameled Sanitary Ware, including Baths, Lavatories, Sinks, Drain Boards, Laundry Trays, &c.

MISCELLANEOUS NOTES.

Pull Down Poles.

Gerard Crane & Co., 62 Reade street, New York, have recently put on the market a neat and attractive style of pull down poles for hung or pivoted windows or transoms. They are properly shaped in the turning and shouldered at one end to receive readily any of the various kinds and makes of window hooks handled by Hardwaremen, or, if so ordered, can be fitted complete, if specified in reasonable quantities. They are made in 4, 5, 6, 7, 8, 9, 10, 12, 14, 16 and 18 feet lengths and can be supplied in light and antique oak, light and antique ash and in both mahogany and cherry stains. This concern, in addition to marketing builders' specialty Hardware, is also agent for the Climax sliding door rail, Climax shutter worker,

wood knobs and base knobs, Indian clubs, dumb bells, ten pins and special wood turning.

Bristol Steel Belt Lacing

The Bristol Company, Waterbury, Conn., manufacturing Bristol's patent steel belt lacing, has added Nos. 112, 114, 117 and 119 as new sizes to the line of double row style, where heretofore but Nos. 111, 113 and 115 were made. This lacing, stamped from tough cold rolled steel, is fully illustrated and described in bulletin No. 39, issued by the company, the different varieties being adapted for leather, rubber, cotton, woven and other belts, from thicknesses of 1-16 to 13-16 inch. The claim made for this style of lacing by the manufacturer is that the wedge shaped points when driven through the belt force the fibers aside without cutting them, thus not weakening the belt, because no material is removed. There is an increasing demand for the larger sizes, many of which are used on heavy and wide belt conveyors.

The Jacobs Chuck Company.

The Jacobs Chuck Company, Hartford, Conn., is preparing to put on the market a new size of its chuck, to be known as the No. 4. It will have a capacity of from 1-16 to ¾ inch, and will be of the same design as the present three sizes. It is expected that the No. 4 chuck will be ready for shipment about June 1.

Heavy Hammers, Track Tools, &c.

Beall Bros., East Alton, Ill., have lately issued a catalogue of their heavy hammers, railroad picks, track tools, &c. The tools thus shown are without exception one piece tools, forged or hammered to shape in one heat and are guaranteed to be neither too hard nor too soft. They have been manufacturing this line for three or four months, but find that the facilities provided are entirely inadequate. Accordingly additional machinery has been ordered, the installation of which will triple the present capacity of the plant.

Screwless Spring Set Shears and Scissors.

The Davies Automatic Shear Company, 41-43 Maiden Lane, New York, has just put on the market the screwless spring set shears and scissors, a type of which is here illustrated. This structural principle has been adopted to automatically compensate for all wear through the tensional parts, not only on the cutting edges, but about the connection, where the wearing away process is most troublesome and most difficult to correct. There are but five parts in all; blades, pivot or stud, tension washer and tension plate, the three latter appearing assembled in Fig. 2. Great importance is attached to the fact that the

Fig. 1.—Screwless Spring Set Hand Shear.

pivot (or roller bearing) is free to rotate, thus reducing friction and evenly distributing the constant wear. When the stud and tension washer are placed the slotted steel spring plate is pushed into the annular groove in upper end of stud, when the small round dot-like depression on the tempered tension plate snaps into one of four shallow holes in surface of the shear member, thus forming a locking device which securely fastens the entire connection. By a sharp hand pressure at this point the blades can be slightly compressed so that the tension plate can be advanced one or more holes at any time, as wear on cutting edges necessitates, or the shear as easily disassembled instantly for any purpose, without using other than the hands. There is a slope in the tension plate, so that the adjustment of the plate forward or backward determines the degrees of variation in amount of tension, by means of which the two blade edges are kept closely together; tighter as the plate is pushed toward shear points and diminishing as it recedes. With this device the frequent tight action of a new shear can be modified one way or the other at will by the individual as the shear is used, having in mind also the kind of material to be cut, the same even tension being maintained in opening as in closing. Thus, it is said, the shears are in large measure self sharpening, as the edge thrown down in cutting is thrown back as the shear opens. Another point the company emphasizes is that with this style of shear the cutting process is confined to opening and closing the blades, no lateral pressure being necessary to keep the cutting edges to their work as the shears are

Fig. 2.—Tension Washer, Pivot and Tension Plate.

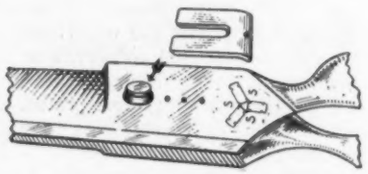


Fig. 3.—Showing Tension Plate About to Enter Groove in End of Pivot.

used. The shears are made in straight and bent trimmers in leading sizes, barbers' shears, both French and German patterns, &c. The barbers' shears are set to a feather weight tension, the tension plate and tension washer being made of light spring steel material. The tension plate has a slightly more pronounced ridge or hump at the back than the household shears, because of the frequency with which a barber who uses them constantly wishes to meet varying conditions of hair or beard to be cut, and also easily to disassemble for cleansing, inside grinding, &c., although there is no difficulty in easily adjusting or disassembling either style. The shears are made of fine material, properly tempered, and polished and nickeled on copper.

The Greystone Chain Key Ring.

The Greystone Mfg. Company, Greystone, Conn., is offering the chain key ring shown herewith. By pulling the chain to the right the wire slides part way out, when that end of the chain can be unhooked from the wire and keys put on the chain. The wire is held in place

The Greystone Chain Key Ring.

so as not to open until desired. The point is made that the chain closes up with the keys and does not bulge the pocket. The article is made nickel plated and in aluminum and packed one dozen on a card.

The Universal Suit Hanger.

A. Holmer Mfg. Company, 268 Wells street, Chicago, Ill., is offering the combination coat and trousers hanger illustrated in the accompanying cut. It is substantially made in fine finished oak. The part of the hanger in which the trousers are secured is composed of two pieces

The Universal Suit Hanger.

of wood, attached to wires, which work in the semi-circular piece of wood at the center of the coat hanger. This permits the two pieces to be separated to insert the trousers, and when they are closed they are held together by japanned wire links, which slide up and down on the wires. The hanger is suspended by a substantial wire hook.

Ely's Dandy Clothes Lifter and Drainer.

By the use of the clothes lifter and drainer shown in the accompanying cuts the clothes may be lifted out of a wash boiler without the use of a stick or other devices. In Fig. 2 the drainer and lifter device is shown in the boiler. The clothes are held up from the bottom of the

Fig. 1.—Ely's Dandy Clothes Lifter and Drainer.

boiler to permit the water to flow freely through them, thus materially assisting in the cleansing process. When removing the clothes from the boiler one end of the drainer is lifted to the top of the boiler and suspended on the edge of the boiler by the lower offsets in the uprights. The other end of the drainer is then lifted in the same manner, in which position it is firmly held, permitting the water to drain out, after which the clothes may be lifted

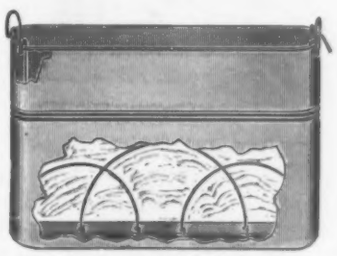


Fig. 2.—Clothes Lifter and Drainer in Boiler.

to the tub. The device may also be used when preserving fruit, permitting the cans filled with fruit to be placed near the bottom of the boiler, from which position they may with care be lifted to the top and sealed. The device is made to fit Nos. 8 and 9 boilers, and is put on the market by Theo. J. Ely Mfg. Company, Girard, Pa.

Fruit Jar Top Straightener and Truer.

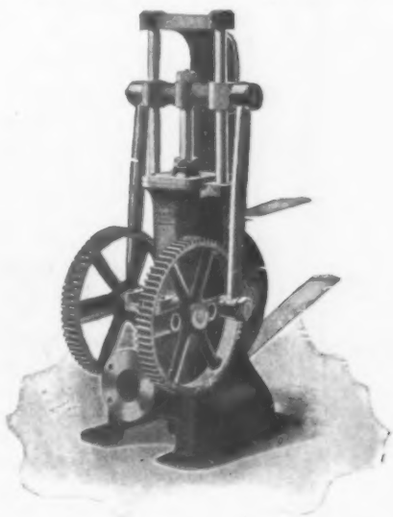
The Home Supply Mfg. Company, Rockford, Ill., is offering the fruit jar top straightener and truer shown in

Fruit Jar Top Straightener and Truer.

the accompanying cuts. The upper cut illustrates the device by itself, and the lower one the manner in which it is used. The circular portion of the device is cast, while the revolving handle is stamped from steel. The device is designed to straighten the lower flanges or edges of fruit jar tops which have become bent or uneven. The point is made that the saving of one jar of fruit more than pays for the straightener.

Monitor Power Working Head.

The Humphryes Mfg. Company, Mansfield, Ohio, is placing on the market the power working head herewith illustrated. It operates with a vertical thrust on the lifting stroke to insure power and efficiency in the greatest degree. The pump is built to stand a hydraulic pressure of 100 pounds and a lifting force of 1200 pounds on the well rod. It is constructed with guide rods, supported top and bottom, to give rigidity to working parts and relieve the flanges of all injurious strains. All bear-



Monitor Power Working Head.

ings are babbitted. The gear reductions are 5 to 1; adjustable stroke 5, 7½ or 10 inch; steel cut pinions (rawhide may be furnished), brass case rod and large air chamber in the main frame. The suction and discharge flanges may be tapped for any size pipe. One of the chief claims made for the working head is its accessibility. By loosening four small set screws the guide rods drop down and the top flange may be loosened and any sized plunger up to 4½ inches diameter may be withdrawn from the well. If the pipe is also to be drawn

it is only necessary to loosen the bottom flange, withdraw it through the opening at the base of the standard and draw the pipe vertically, there being sufficient space to pass any size up to 4 inch diameter. The device may be used in connection with any ordinary deep well cylinders for deep well pumping, or with irrigating cylinders for handling large quantities of water. The capacity is dependent upon the cylinder used for various depths of well and operating conditions. The pump is referred to as especially adapted for use with light powered gas or gasoline engines, and its operation is fully guaranteed by the company.

Surface Gauge No. 115.

The surface gauge shown herewith has a solid iron base and stands squarely on the work. The spindle has a fine adjustment by means of a screw with a knurled

Surface Gauge No. 115.

head nut, and after setting can be locked firmly by tightening the screw shown in the cut. The base is finished in black enamel, with wearing surfaces polished. The scriber is made of tool steel, carefully tempered. The gauge is 9 inches high. This device is put on the market by Massachusetts Tool Company, Greenfield, Mass.

Wrought Truss Hitching Post.

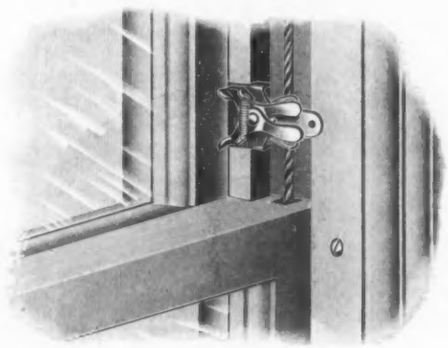
Wrought Truss Hitching Post.

The Bicknell Mfg. & Supply Company, Janesville, Wis., manufactures the hitching post shown in the accompanying illustration. The post is made of 1¼-inch gas pipe and is provided with three ⅜-inch wrought iron truss rods running the full length of the post, which not only add to its appearance but also to its strength. The full length is 5½ feet and the ground plate is adjusted to provide for a hight of 3 feet 4 inches above ground. However, this can be changed if desired by raising or lowering the ground plate.

Albee & Seltz, Galeton, Pa., have purchased the entire stock of Hardware, Stoves, Furniture, &c., of Elmer Hardware Company, Galeton, and will consolidate it with their own stock, making one of the largest lines of Hardware, Building Materials and Plumbing Goods in northern Pennsylvania.

The Taylor Ventilating Window Fastener.

The ventilating window fastener shown herewith snaps into place when desired and can be put on or taken off instantly. It is alluded to as not marring the window unless an attempt is made to open the window wider than the point at which it is set. If an attempt is made from the outside to get in, the locking levers will move about ¼ inch, locking themselves both to the window and to



The Taylor Ventilating Window Fastener.

the parting stop and then positively locking against the lugs on the fastener so that the window cannot be opened any further. The fastener locks both the upper and lower sash; both can be locked open or shut, or one open and one shut, as preferred. The fastener can be changed from one window to another, and it is impossible, it is explained, for children to open a window protected by the fastener far enough to fall out. The device is designed for ventilating rooms both at night and during the day, and can easily be carried in the pocket for use when traveling. It is put on the market by the Taylor Mfg. Company, Hartford, Conn.

Simplex Riveter.

F. H. Smith Mfg. Company, Chicago, Ill., is making the riveting tool shown in the accompanying cut. It is made of hardened steel with knurled grip and is intended for setting tubular or bifurcated rivets. The tool is simple, and is described as being easy to use, the operating

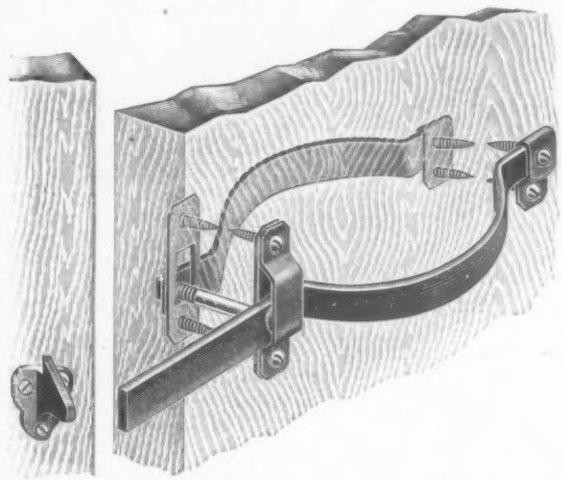
Simplex Riveter.

end having a concave surface, curving from the edge to a point in the center which fits in the shank of the rivet. The riveter may be carried in the vest pocket. To set rivets all that is necessary is a hammer to drive with and a convenient hard surface on which to rest the head of the rivet. The tool, with a box of 50 rivets, can be retailed at 25 cents.

W. W. Sanford has purchased the Implement and General Store business of S. L. Maggee at Daisy, Wash.

Falkenhainer's Superior Steel Barn Door Latch.

All parts of the barn door latch shown herewith, except the catch, are made of steel. The connecting bolt passes through the outer handle and screws into the inside handle, and is fitted with a jamb nut on the inside to avoid all danger of the thread giving away as the result of the hard pulling on either handle. In this way the pressure is applied against the door, whether in pulling it open or shut. The connecting bolt makes the latch adjustable for doors from ¾ inch to 1½ inches thick. A shorter or longer bolt can be used if the door is lighter or heavier. The latches are alluded to as having all holes



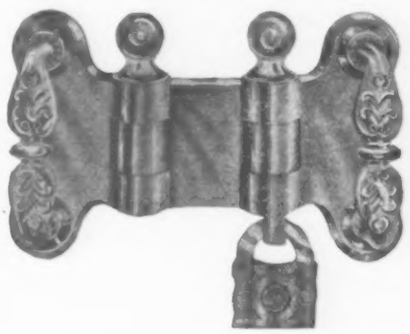
Falkenhainer's Superior Steel Barn Door Latch.

punched true and all parts fitting perfectly and smoothly. They are finished with a coat of durable black japan. An extra catch is supplied with each latch, to be placed on the outside of the building to hold the door open when desired. The latches are packed with all necessary screws, one dozen in neat and convenient shelf boxes.

Among the claims made by the manufacturers are the following: That the thumb piece is eliminated; that the action is direct and positive; that the handles or pulls are of convenient shape; that the manner of operating does away with all danger of pulling out the screws when a hard pull is necessary to open or close the door, whether from swelling or other causes; that it is adjustable to the various thicknesses of doors, and that it is simple and easy to apply, a brace and bit and screw driver being all the tools required. The latch is offered by Falkenhainer & Co., 313 Carr street, St. Louis, Mo.

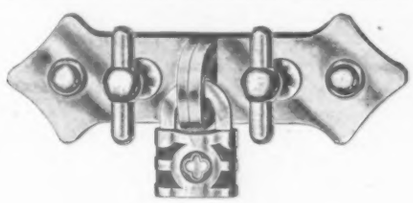
Door Hasps and Locks.

J. J. Ryan & Co., Monroe and Jefferson streets, Chicago, Ill., manufacturers of mausoleum and monumental metal work, are offering the combination door hasps and



Door Hasp and Lock No. 2195.

door pulls shown herewith for stone or marble doors for mausoleum work. It has been the custom heretofore, it is explained, to furnish hasps only without the handle part attached. The moving of the ponderous doors back and forth was thus a difficult and often a painful



Door Hasp and Lock No. 2196.

experience, there being only the plain sharp edges of the bronze to take hold of. The handles are designed to eliminate all trouble of this character, and in addition to improve the appearance of the hasp and door.

PAINTS, OILS AND COLORS

Animal, Fish and Vegetable Oils—

	℔ gal.
Linseed, City, raw	41 @42
Linseed, City, Boiled	42 @43
Linseed, State and West'n, raw	39 @40
Linseed, raw Calcutta seed	@68
Lard, Extra Prime, Winter	72 @73
Lard, Extra No. 1	62 @63
Lard, No. 1	41 @43
Cotton-seed, Crude, f.o.b. mills	31 @31½
Cotton-seed, Summer Yellow, Prime	39 @..
Cotton-seed, Summer Yellow, off grades	37 @38
Sperm, Crude	55 @..
Sperm, Natural Spring	@..
Sperm, Bleached Spring	@..
Sperm, Natural Winter	63 @65
Sperm, Bleached Winter	66 @67
Tallow, Prime	51 @53
Whale, Crude	31 @32
Whale, Natural Winter	38 @41
Whale, Bleached Winter	40 @42
Extra Bleached Winter	44 @46
Menhaden, Brown, Strained	26 @29
Menhaden, Light, Strained	27 @30
Menhaden, Bleached, Winter	@..
Menhaden, Ex-Bld., Winter	@..
Menhaden, Southern	@..
Cocoanut, Ceylon	℔ lb 7 @..
Cocoanut, Cochin	℔ lb 8 @ 8¼
Cod, Domestic, Prime	30 @31
Cod, Newfoundland	35 @37
Red, Elaine	38 @41
Red, Saponified	℔ lb 4¾@ 5
Olive, Italian, bbls	57 @60
Neatsfoot, prime	48 @49
Palm, Logos	℔ lb 6 @ 6¼

Mineral Oils—

	℔ gal.
Black, 29 gravity, 25@30 cold test	10½@11½
Black, 29 gravity, 15 cold test	11½@12½
Black, Summer	10½@11½
Cylinder, light filtered	18 @19
Cylinder, dark filtered	16 @17
Paraffine, 903-907 gravity	13½@14
Paraffine, 903 gravity	12½@13
Paraffine, 883 gravity	10¼@10¾
Paraffine, Red	12½@14

In small lots ½¢ advance.

Miscellaneous—

Barytes:	
White, Foreign	℔ ton $17.50@19.00
Amer. floated	℔ ton 19.00@.....
Off color, No. 2	℔ ton 13.50@15.00
Chalk, in bulk	℔ ton 3.00@ 3.25
Chalk, in bbls	℔ 100 lb ....@ .35
China Clay, English	℔ ton 12.00@17.00
Cobalt, Oxide	℔ 100 lb 2.50@ 2.60
Whiting, Common	℔ 100 lb .43@ .48
Whiting, Gilders	℔ 100 lb .50@ .55
Whiting, Ex. Gilders	℔ 100 lb .55@ .60

Putty, Commercial—℔ 100 lb

In bladders	$1.70 @1.85
In bbls. or tubs	1.20 @1.40
In 1 lb to 5 lb cans	2.65 @2.95
In 12½ to 50 lb cans	1.50 @1.90

Spirits Turpentine—℔ gal.

In Oil bbls	62½@63
In machine bbls	63 @63½

Glue—

	℔ lb
Cabinet	11 @15
Common Bone	7 @ 9
Extra White	18 @24
Foot Stock, White	11 @14
Foot Stock, Brown	8 @11
German Hide	12 @18
French	10 @40
Irish	13 @16
Low Grade	9 @12
Medium White	14 @17

Gum Shellac—

	℔ lb
Bleached, Commercial	39 @41
Bone Dried	49 @51
Button	40 @..
Diamond I	53 @54
Fine Orange	46 @50
A. C. Garnet	39 @40
D. C.	@56
Octagon B	@52
T. N.	42 @43
V. S. O.	53 @54

Colors in Oil—

	℔ lb
Black, Lampblack	12 @14
Blue, Chinese	26 @45
Blue, Prussian	32 @36
Blue, Ultramarine	13 @16
Brown, Vandyke	11 @14
Green, Chrome	12 @16
Green, Paris	@24
Sienna, Raw	12 @15
Sienna, Burnt	12 @15
Umber, Raw	11 @14
Umber, Burnt	11 @14

White Lead, Zinc, &c.—

	℔ lb
Lead, English white, in Oil	9½@ 9¾
Lead, American white, in Oil:	
Lots of 500 lb or over	@ 7¼
Lots less than 500 lb	@ 7¾
In Barrels	@ 6¾
Lead, White, in oil, 25 lb tin pails, add to keg price	@ ⅛
Lead, White, in oil, 12½ lb tin pails, add to keg price	@ 1
Lead, White, in oil, 1 to 5 lb ass'ted tins, add to keg price	@ 1¼

Lead, American, Terms: For lots 12 tons and over ¼¢ rebate; and 2% for cash if paid in 15 days from date of invoice; for lots of 500 lbs. and over 2% for cash if paid in 15 days from date of invoice, for lots of less than 500 lbs. net.

	℔ lb
Lead, White, Dry, in bbls	@ 6¾
Zinc, American, dry	4⅞@ 5
Zinc, French:	
Antwerp, Red Seal, dry	8¾
Antwerp, Green Seal, dry	9¾
Paris, Red Seal, dry	9¾
Paris, Green Seal, dry	10½
Zinc, V. M. French, in Poppy Oil:	
Green Seal:	
Lots of 1 ton and over	12¾@13½
Lots of less than 1 ton	12¾@13¾
Zinc, V. M. French, in Poppy Oil:	
Red Seal:	
Lots of 1 ton and over	11¾@11¾
Lots of less than 1 ton	11¾@12¼

Discounts.—French Zinc.—Discounts to buyers of 10 bbl. lots of one or mixed grades, 1%; 25 bbls., 2%; 50 bbls., 4%.

Dry Colors—

	℔ lb
Black, Carbon	5 @10
Black Drop, American	4 @ 6
Black, Drop, English	5 @15
Black, Ivory	16 @..
Lamp, Com	4½@ 6
Blue, Celestial	4 @ 6
Blue, Chinese	29 @32
Blue, Prussian	27 @30
Blue, Ultramarine	4½@15
Brown, Spanish	½@ 1
Carmine, No. 40	$3.30@3.40
Green, Chrome, ordinary	3½@ 6
Green, Chrome, pure	17 @25
Lead, Red, bbls., ½ bbls. and kegs:	
Lots 500 lb or over	@ 7¼
Lots less than 500 lb	@ 7¾
Litharge, American, bbls	@ 7¼
Ocher, American	℔ ton $8.50@16.00
Ocher, American Golden	2½@ 3½
Ocher, French	1¼@ 2½
Ocher, Foreign Golden	3 @ 4
Orange Mineral, English	10 @12
Orange Mineral, French	10¾@12
Orange, Mineral, German	8½@10
Orange, Mineral, American	8¼@ 8½
Red, Indian, English	4½@ 8½
Red, Indian, American	3 @ 3¾
Red, Turkey, English	4 @10
Red, Tuscan, English	7 @10
Red, Venetian, Amer.	℔ 100 lb $0.50@1.25
Red Venetian, English	100 lb $1.15@1.75
Sienna, Italian, Burnt and Powdered	3 @ 9½
Sienna, Ital., Raw, Powd	3 @ 6½
Sienna, American, Raw	1½@ 2
Sienna, American, Burnt and Powdered	1½@ 2
Talc, French	℔ ton $15.00@30.00
Talc, American	℔ ton 15.00@25.00
Terra Alba, French	℔ 100 lb 90 @1.00
Terra Alba, English	℔ 100 lb 90 @1.00
Terra Alba, American, ℔ 100 lb, No. 1	70 @80
Terra Alba, American, ℔ 100 lb, No. 2	60 @65
Umber, T'key, Bnt. & Pow	2½@ 3½
Umber, Turkey, Raw & Pow	2½@ 3½
Umber, Burnt, Amer	1½@ 2
Umber, Raw, Amer	1½@ 2
Yellow Chrome	12 @14
Vermilion, American Lead	10 @25
Vermilion, Quicksilver, bulk	@65
Vermilion, Quicksilver, bags	@66
Vermilion, English, Import	75 @80
Vermilion, Chinese	90.90@1.00

Current Hardware Prices.

General Goods.—In the following quotations General Goods—that is, those which are made by more than one manufacturer—are printed in *Italics*, and the prices named, unless otherwise stated, represent those current in the market as obtainable by the fair retail Hardware trade, whether from manufacturers or jobbers. Very small orders and broken packages often command higher prices, while lower prices are frequently given to larger buyers.

Special Goods.—Quotations printed in the ordinary type (Roman) relate to goods of particular manufacturers, who are responsible for their correctness. They usually represent the prices to the small trade, lower prices being obtainable by the fair retail trade, from manufacturers or jobbers.

Range of Prices.—A range of prices is indicated by means of the symbol @. Thus 33⅓ @ 33⅓ & 10% signifies that the price of the goods in question ranges from 33⅓ per cent. discount to 33⅓ and 10 per cent. discount.

Names of Manufacturers.—For the names and addresses of manufacturers see the advertising columns and also THE IRON AGE DIRECTORY, issued May, 1905, which gives a classified list of the products of our advertisers and thus serves as a DIRECTORY of the Iron, Hardware and Machinery trades.

Standard Lists.—A new edition of "Standard Hardware Lists" has been issued and contains the list prices of many leading goods.

Additions and Corrections.—The trade are requested to suggest any improvements with a view to rendering these quotations as correct and as useful as possible to Retail Hardware Merchants.

Adjusters, Blind—
Domestic, ℔ doz. $3.00.....33⅓%
North's 10%
Zimmerman's—See Fasteners, Blind.

Window Stop—
Ives' Patent.....35%
Taplin's Perfection.....35%

Ammunition—
See *Caps, Cartridges, Shells, &c.*

Anvils—American—
Eagle Anvils.....℔ lb 6¾@7 ¢
Hay-Budden, Wrought.....8@9¼ ¢
Horseshoe brand, Wrought.....8@9¼ ¢
Trenton .....℔ lb 9@9¼ ¢

Imported—
Peter Wright & Sons.....℔ lb 10¼ ¢

Anvil, Vise and Drill—
Millers Falls Co., $18.00.....15&10%

Apple Parers—
See *Parers, Apple, &c.*

Aprons, Blacksmiths'—
Livingston Nail Co.....33⅓%

Augers and Bits—
Com. Double Spur.....75@75&5%
Jennings' Patn., reg. finish.....50&10@60%
Black Lip or Blued.....60&10%
Boring Mach. Augers.....70&10%
Car Bits, 12-in. twist.....50&10%
Ford's Auger and Car Bits.....40&5%
Forstner Pat. Auger Bits.....25%
C. E. Jennings & Co.:
No. 10 ext. lip. R. Jennings' list..25%
No. 30, R. Jennings' list.....40&7½%
Russell Jennings'.....25&10&2½%
L'Hommedieu Car Bits.....15%
Mayhew's Countersink Bits.....45%
Millers Falls.....50&20&7½%
Ohio Tool Co.'s Bailey Auger and Car Bits.....40&10%
Pugh's Black.....30%
Pugh's Jennings' Pattern.....35%
Snell's Auger Bits.....60%
Snell's Bell Hangers' Bits.....60%
Snell's Car Bits, 12-in. twist.....60&10%
Wright's Jennings' Bits.....50%

Bit Stock Drills—
See *Drills, Twist.*

Expansive Bits—
Clark's small, $18; large, $26....50&10%
Clark's Pattern, No. 1, ℔ doz. $28; No. 2, $18.....65%
Ford's, Clark's Pattern.....60&5%
C. E. Jennings & Co., Steer's Pat..25%
Swan's 60%

Gimlet Bits—
Per gro.
Common Dble. Cut....$3.00@3.25
German Pattern, Nos. 1 to 10, $4.60; 11 to 13, $5.75

Hollow Augers—
Bonney Pat., per doz..$5.50@6.00
Ames .....25&10%
Universal 20%
Wood's Universal.....25%

Ship Augers and Bits—
Ship Augers.....45&5&2—%
Ford's .....33⅓&5%
C. E. Jennings & Co.:
L'Hommedieu's 15%
Watrous' .....35&5%
Ohio Tool Co.'s.....40%
Snell's 40%

Awl Hafts—
See *Handles, Mechanics' Tool.*

Awls—
Brad Awls:
Handled .....gro. $2.75@3.00
Unhdled, Shldered..gro.63@66 ¢
Unhandled, Patent..gro.66@70 ¢
Peg Awls:
Unhandled, Patent..gro. 31@34 ¢
Unhdled, Shldered..gro. 65@70 ¢
Scratch Awls:
Handled, Com...gro. $3.50@4.00
Handled, Socket..gro.$11.50@12.00
Hurwood 40%

Awl and Tool Sets—
See *Sets, Awl and Tool.*

Axes—
Single Bit, base weights:
First Quality.....$4.75@5.00
Second Quality.....$4.25@4.50
Double Bit, base weights:
First Quality.....$7.00@7.50
Second Quality.....$6.50@6.75

Axle Grease—
See *Grease, Axle*

Axles—
Iron or Steel
Concord, Loose Collar...4¼@4¾ ¢
Concord, Solid Collar...4¾@5¼ ¢
No. 1 Common, Loose...3¼@3¾ ¢
No. 1½ Com., New Style3¾@4¼ ¢
No. 2 Solid Collar.....4@4½ ¢
Half Patent:
Nos. 7, 8, 11 and 12....75@75&5%
Nos. 13 to 14.....70&10@75&5%
Nos. 15 to 18...75&10@75&10&5%
Nos. 19 to 22...75&10@75&10&5%

Boxes, Axle—
Common and Concord, not turned lb.,4½@5 ¢
Common and Concord, turned. lb., 5½@6 ¢
Half Patent.....lb. 8½@9 ¢

Bait—
Fishing—
Hendryx:
A Bait.....20%
B Bait.....25%
Competitor Bait.....20&5%

Balances—
Sash—
Caldwell new list.....50%
Pullman .....50&10@60%

Spring—
Spring Balances.....50&10@60%
Chatillon's:
Light Spg. Balances.....40&10%
Straight Balances.....40%
Circular Balances.....50%
Large Dial.....30%

Barb Wire—
See *Wire, Barb.*

Bars—
Crow—
Steel Crowbars, 10 to 40 lb.... per lb., 3¼ ¢

Towel—
No. 10 Ideal, Nickel Plate..℔ gro. $8.50

Beams, Scale—
Scale Beams.....40&10@50%
Chattillon's No. 1.....30%
Chattillon's No. 2.....40%

Beaters, Carpet—
Holt-Lyon Co.:
No. 12 Wire Coppered ℔ doz. $0.85; Tinned $1.00
No. 11 Wire Coppered ℔ doz. $1.10; Tinned $1.20
No. 10 Wire Galvanized..℔ doz. $1.75
Western W. G. Co.:
No. 1 Electric.....℔ gro. $7.80
No. 2 Buffalo.....℔ gro. $9.00
No. 3 Perfection Dust.....℔ gro. $8.00

Egg—
Holt-Lyon Co.:
Holt, No. A, Japanned....℔ doz. $1.20
Holt, No. 1, Tinned....℔ doz. $1.50
Holt, No. B, Japanned....℔ doz. $2.00
Holt, No. 2, Tinned....℔ doz. $2.25
Lyon, No. 2, Japanned....℔ doz. $1.25
Lyon, No. 3, Japanned....℔ doz. $1.50
Taplin Mfg. Co.: ℔ gro.
No. 60 Improved Dover.....$6.00
No. 75 Improved Dover.....$6.50
No. 100 Improved Dover.....$7.00
No. 102 Improved Dover, Tin'd..$8.50
No. 150 Improved Dover, Hotel..$15.00
No. 152 Imp'd Dover, Hotel, T'd.$17.00
No. 200 Imp'd Dover Tumbler....$8.50
No. 202 Imp'd Dover Tumbler, T'd.$9.50
No. 300 Imp'd Dover Mammoth, ℔ doz. $25.00
T. & S. Dover.....$6.00
Western, W. G. Co., Buffalo.....$7.00
Wonder (R. M. Co.)..℔ gro. net, $6.00

Bellows—
Blacksmith, Standard List.. 60&10@70&10%

Hand—
Inch..	*6*	*7*	*8*	*9*	*10*
Doz..	*$4.75*	*5.70*	*6.65*	*7.60*	*8.85*

Molders—
Inch..	*9*	*10*	*11*	*12*	*14*
Doz..	*$8.00*	*9.00*	*10.50*	*12.50*	*14.50*

Net Prices.

Bells—
Cow—
Ordinary goods...75&5@75&10&5%
High grade.....70&10@70&10&5%
Jersey .....75&10%
Texas Star.....50%

Door—
Abbe's Gong.....45%
Burton Gong.....50%
Home, R. & E. Mfg. Co.'s.....55&10%
Lever and Pull, Sargent's....60&10&10%
Trip Gong.....50&10@50&10&5%
Yankee Gong.....55%

Hand—
Hand Bells, Polished, Brass.60&10%
White Metal.....60%
Nickel Plated.....50&10&60%
Swiss .....60@60&7½%
Cone's Globe Hand Bells.....33⅓@35%
Silver Chime.....33⅓@35%

Miscellaneous—
Farm Bells.....lb. 2¼ ¢
Steel Alloy Church and School 50&10@60%
American Tube & Stamping Co. Gongs 75%
Table Call Bells.....50@50&10%

Belting—
Leather—
Extra Heavy, Short Lap..69&5%
Regular Short Lap....60&10&5%
Standard 70%
Light Standard.....70&5%
Cut Leather Lacing.....50%
Leather Lacing Sides, per sq. ft. 25¢

Rubber—
Agricultural (Low Grade).... 75@75&5%
Common Standard....70@70&10%
Standard .....60&5@60&10%
Extra .....60@60&5%
High Grade.....50&5@50&10%

Bench Stops—
See *Stops, Bench*

Benders and Upsetters, Tire—
Detroit Perfected Tire Bender.....40%
Detroit Stoddard's Lightning Tire Upsetters, No. 1, $4.25; No. 2, $7.25; No. 3, $10.50; No. 4, $16.25; No. 5, $20.50.
Green River Tire Benders and Upsetters 20%

Bicycle Goods—
John S. Leng's Son's 1902 list:
Chain 50%
Parts 50%
Spokes 50%
Tubes 60%

Bits—
Auger, Gimlet, Bit Stock Drills, &c.—See *Augers and Bits.*

Blocks—
Tackle—
Common Wooden....70&10@75%
Hartz St. Tackle Blocks.....50@50&5%
B. & L. B. Co.:
Boston Wood Snatch, 50%; Eclipse Steel, 75%; Hollow Steel, 50&10%; Star Wire Rope, 50%; Tarbox Metal Snatch, 50%; Tarbox New Style Steel, 50&10%; Wire Rope Snatch, 50%.
Lane's Patent Automatic Lock and Junior 30%
Stowell's Novelty. Mal. Iron....50&10%
Stowell's Self Loading.....60%
See also Machines, Hoisting.

Boards, Stove—
Zinc, Crystal, &c.....40%
Paper Embossed.....40&10%

Boards, Wash—
See *Washboards.*

Bobs, Plumb—
Keuffel & Esser Co.....33⅓%

Bolts—
Carriage, Machine, &c.—
Common Carriage (cut thread):
⅜ x 6 and smaller.....75@—%
Larger and Longer..65&5@—%
Phila. Eagle,$3.00 list May 2½,'99 80%
Bolt Ends, list Feb. 1½, '95.... 65&10@—%
Machine, ⅜ x 4 and smaller 75@—%
Machine, larger and longer.. 65&5@—%

Door and Shutter—
Cast Iron Barrel, Japanned, Round Brass Knob:

Inch.....	*3*	*4*	*5*	*6*	*8*
Per doz.	*$0.30*	*.35*	*.45*	*.60*	*.80*

Cast Iron Spring Foot, Jap'd:

Inch.....	*6*	*8*	*10*
Per doz.....	*$1.20*	*1.50*	*2.25*

Cast Iron Chain, Flat, Japanned:

Inch.....	*6*	*8*	*10*
Per doz.....	*$1.00*	*1.40*	*1.65*

Cast Iron Flat Shutter, Jap'd., Brass Knobs:

Inch.....	*6*	*8*	*10*
Per doz.....	*$0.75*	*.95*	*1.25*

Wrt Barrel Japd.....80@80&10%
Wrt " Bronzed....50@50&10%
Wrt. Spring...70&10@70&10&10%
Wrt. Shutter.....50&5@50&10&5%
Wrt. Square Neck....75@75&10%
Wrt Square.66⅔&10@66⅔&10&10%
Ives' Patent Door.....60%

Plow and Stove—
Plow .....65&10@—%
Stove .....87½&10@—%

Tire—
Norway Iron.....80%
Norway Iron.....80%
American Screw Company:
Norway Phila., list Oct. 16, '84...80%
Eagle Phila., list Oct. 16, '84....82½%
Bay State, list Dec. 28, '99.....80%
Franklin Moore Co.:
Norway Phila., list Oct. 16, '84...80%
Eagle Phila., list Oct. 16, '84....82½%
Eclipse, list Dec. 28, '99.....80%
Mount Carmel Bolt Co.:
Norway Phila., list Oct. 16, '84....80%
Eagle Phila., list Oct. 16, '84....82½%
Mount Carmel, list Dec. 28, '99...80%
Russell, Burdsall & Ward Bolt & Nut Co.:
Empire, list Dec. 28, '99.....80%
Norway Phila., list Oct., '84.....80%
Upson Nut Co.:
Tire Bolts.....72½%

Borers, Tap—
Borers Tap, Ring, with Handle:

Inch.....	*1¼*	*1½*	*1¾*	*2*
Per doz...	*$4.80*	*5.60*	*6.40*	*8.00*
Inch			*2¼*	*2½*
Per doz.....			*$5.65*	*11.50*

Enterprise Mfg. Co., No. 1, $1.25; No. 2, $1.65@$1.75; No. 3, $2.50 each...25%

Boxes, Mitre—
C. E. Jennings & Co.....30%
Langdon .....15&10%
Perfection 40%
Seavey 33⅓%
Stanley R. & L. Co.:
Nos. 240 to 460.....30%
Nos. 50 and 60.....35%

Braces—
Common Ball, American..$1.25@1.30
Barber's .....50&10&10@60&10%
Fray's Genuine Spofford's.....60%
Fray's No. 70 to 120, 81 to 123, 207 to 414 .....60%
C. E. Jennings & Co.....50&5%
Mayhew's Ratchet.....60%
Mayhew's Quick Action Hay Pat...50%
Millers Falls Drill Braces.....25&10%
P., S. & W. Co., Peck's Pat.60@60&5%
Stanley R. & L. Co.:
Stanley 35%
Victor 45%

Brackets—
Wrought Steel...80&10@80&10&5%
Griffin's Pressed Steel.....80@80&10%
Griffin's Folding Brackets.....70&10%
Stowell's Cast Shelf.....75%
Stowell's Sink.....50%
Western, W. G. Co., Wire.....60&10%

Bright Wire Goods—
See *Wire and Wire Goods.*

Broilers—
Kilbourne Mfg. Co.....75&20%
Western, W. G. Co.....80%
Wire Goods Co.....75@75&10%

Buckets, Galvanized—
Price per dozen.

Quart.....	*10*	*12*	*14*
Water, Regular...	*1.40*	*1.70*	*1 90*
Water, Heavy....	*3.40*	*3.70*	*3.80*
Fire, Rd. Bottom..	*2.30*	*2.55*	*2.95*
Well	*2.55*	*2.87*	*3.15*

Bucks, Saw—
Hoosier.....℔ gro. $36.00

Bull Rings—
See *Rings, Bull*

Butts—
Brass—
Wrought, list, Sept., '96..15@—%
Cast Brass, Tiebout's.....50%

Cast Iron—
Fast Joint, Broad....40&10@50%
Fast Joint, Narrow....40&10@50%
Loose Joint.....70&10@75%
Loose Pin.....70&10@75%
Mayer's Hinges.....70@70&5
Parliament Butts.....70@70&5

Wrought Steel—
	Discount.
Reversible and Broad.	*75&5%*
Light Reversible, Light Narrow	*75&10%*
Loose Joint, Narrow, L't Inside Blind, etc.	*75%*
Back Flaps, Table, Chest.	*70&10%*

Extra Quality.

Cages, Bird—
Hendryx, Brass:
3000, 5000, 1100 series.....5%
1200 series.....33⅓%
200, 300, 600 and 900 series.....40&10%
Hendryx Bronze:
700, 800 series.....40&10%
Hendryx Enameled.....40&10%

Calipers—
See *Compasses.*

Calks, Toe and Heel—
Blunt, 1 prong....per lb.4¢@4¼ ¢
Sharp, 1 prong...per lb., 4½@4¾ ¢
Burke's Blunt.....4@4¼ ¢
Burke's Sharp.....4½@4¾ ¢

Gautier, Blunt....4@4¼¢
Gautier, Sharp....4½@4¾¢
Perkins', Blunt Toe....₰ lb 3.65¢
Perkins', Sharp Toe....₰ lb 4.15¢

Can Openers—
See *Openers, Can.*

Cans, Milk—

	5	8	10 gal.
Illinois Pattern	$1.35	1.85	2.05 each.
New York Pattern	1.50	2.20	2.45 each.
Baltimore Pattern	1.50	2.20	2.45 each.
Dubuque	1.35	1.60	1.75 each.

Cans, Oil—
Buffalo Family Oil Cans:

3	5	10 gal.
$18.00	60.00	129.60 gro., net.

Caps, Percussion—
Eley's E. B....52@55¢
G. D....per M 34@35¢
F. L....per M 40@42¢
G. E....per M 48@50¢
Musket....per M 62@63¢

Primers—
Berdan Primers, $2 per M...80%
B. L. Caps (Sturtevant Shells) $2 per M....20%
All other primers per M.$1.52@1.60

Cartridges—
Blank Cartridges:
32 C. F., $5.50....10&5%
38 C. F., $7.00....10&5%
22 cal. Rim, $1.50....10&5%
32 cal. Rim, $2.75....10&5%
B. B. Caps, Con. Ball, Swgd.$1.90
B. B. Caps, Round Ball....$1.49
Central Fire....25%
Target and Sporting Rifle..15&5%
Primed Shells and Bullets.15&10%
Rim Fire, Sporting....50%
Rim Fire, Military....15&5%

Casters—
Bed....70@70&10%
Plate....60&10@60&10&5%
Philadelphia....75@75&10%
Acme, Ball Bearing....33⅓%
Boss....70&10%
Boss Anti-Friction....70&10%
Gem (Roller Bearing)....80%
Martin's Patent (Phoenix)....45%
Standard Ball Bearing....45%
Tucker's Patent low list....30%
Yale (Double Wheel) low list....50%

Cattle Leaders—
See *Leaders, Cattle.*

Chain, Coil—
American Coil, Straight Link:

3-16	¼	5-16	⅜	7-16	½	9-16
$3.70	5.90	4.95	4.20	4.05	3.95	3.90
⅝	¾	⅞ to 1	1⅛ to 1¼ inch.			
$3.85	3.70	3.65	3.80			

German Coil....60&10&10@70%

Halter—
Halter Chains....60&5@60&10%
German Pattern Halter Chains, list July 2½, '97....60&10&10%
Covert Mfg. Co.
Halter....35&5%
Covert's Saddlery Works
Halter....70%

Cow Ties—
See *Halters and Ties.*

Trace, Wagon, &c.—
Traces, Western Standard: 100 pr.
6½—6-3, Str'ght, with ring..$25.00
6½—6-2, Str'ght, with ring..$26.00
6½—8-2, Str'ght, with ring..$30.00
6½—10-2, Str'ght, with ring..$35.00
NOTE.—Add 2c per pair for Hooks. Twist Traces 2c per pair higher than Straight Link.
Eastern Standard Traces, Wagon Chain, &c....60&10%

Miscellaneous—
Jack Chain, list July 10, '93:
Iron....60&10%
Brass....60&10%
Safety Chain....70&10%
Gal. Pump Chain....lb. 4@4½%
Covert Mfg. Co.:
Breast, Halter, Heel, Rein, Stallion....40%
Covert Sad. Works:
Breast, Hold Back, Rein....70%
Oneida Community:
Am. Dog Leads and Kennel Chains, 40@40&5%
Niagara Dog Leads and Kennel Chains....45@60&5%
Wire Goods Co.:
Dog Chain....70&10%
Universal Dbl.-Jointed Chain....50%

Chain and Ribbon, Sash—
Oneida Community:
Copper Chain....60&5%
Steel Chain....60%
Pullman:
Bronze Chain....60%
Steel Chain....60&10%
Sash Chain Attachments, per set..8¢
Aluminoy Sash Ribbon, per 100 ft....$1.25@$3.00
Sash Ribbon Attachments, per set..8¢

Chalk—(From Jobbers.)
Carpenters' Blue....gro. 38@40¢
Carpenters' Red....gro. 33@35¢
Carpenters' White....gro. 23@30¢
See also Crayons.

Checks, Door—
Bardsley's....45%
Eclipse....60&10%
Pullman, per gro....$54.00
Russwin....40%

Chests, Tool—
American Tool Chest Co.:
Boy's Chests, with Tools....55%
Youths' Chests, with Tools....40%
Gentlemen's Chests, with Tools..30%
Farmers', Carpenters', etc., Chests, with Tools....20%
Machinists' and Pipe Fitters' Chests, Empty....50%
Tool Cabinets....50%
C. E. Jennings & Co.'s Machinists' Tool Chests....33⅓&10%

Chisels—
Socket Framing and Firmer
Standard List...75&10@75&10&5%
Buck Bros....30%
Charles Buck....30%
C. E. Jennings & Co. Socket Firmer No. 10....60%
C. E. Jennings & Co. Socket Framing No. 15....60%
Ohio Tool Co.'s....70%
Swan's....75%
L. & I. J. White....30@20&5%
L. & I. J. White, Tanged....25&5%

Tanged—
Tanged Firmers....33 1-3@40%
Buck Bros....30%
Charles Buck....30%
C. E. Jennings & Co. Nos. 191, 181..25%

Cold—
lb.
Cold Chisels, good quality..13@15¢
Cold Chisels, fair quality..11@12¢
Cold Chisels, ordinary...9@10¢

Chucks—
Almond Drill Chucks....35%
Almond Turret Six-Tool Chuck....35%
Beach P'at., each $8.00....35&5%
Empire....25%
Blacksmiths'....25%
Jacobs' Drill Chucks....35%
Pratt's Positive Drive....25%
Skinner Patent Chucks:
Independent Lathe Chucks....40&10%
Universal, Reversible Jaws....40%
Combination, Reversible Jaws....40%
Drill Chucks, New Model....25%
Drill Chucks, Standard....40&10%
Drill Chuck, Skinner Pat....25%
Drill Chucks, Positive Drive....33⅓%
Planer Chucks....30%
Face Plate Jaws....40&10%
Standard Tool Co.:
Improved Drill Chuck....45%
Union Mfg. Co.:
Combination, Nos. 1, 2, 3, 4, 5, 6, 7, 8 and 17....40%
Combination, No. 21....35%
Scroll Combination, Nos. 82 and 84....30%
Geared Scroll, Nos. 33, 34 and 35..35%
Independent Iron, Nos. 18 and 318..40%
Independent Steel, No. 61....30%
Union Czar Drill, Nos. 000, 101, 103....35%
Universal 11, 12, 16, 17, 13, 14, 15..40%
Universal, No. 42....35%
Iron Face Plate Jaws, Nos. 28, 30, 48 and 50....40%
Steel Face Plate Jaws, Nos. 70 and 72....35%
Westcott Patent Chucks:
Lathe Chucks....50%
Little Giant Auxiliary Drill....50%
Little Giant Double Grip Drill..50%
Little Giant Drill, Improved....50%
Oneida Drill....50%
Scroll Combination Lathe....50%

Clamps—
Adjustable, Hammers'....20@20&5%
Cabinet, Sargent's....50&10%
Carriage Makers', P., S. & W. Co....40&10@50%
Carriage Makers', Sargent's....60%
Besly, Parallel....33⅓&10%
Lineman's, Utica Drop Forge & Tool Co....40%
Wood Workers, Hammers'....40&10%
Saw Clamps, see Vises, Saw Filers'.

Cleaners, Drain—
Iwan's Champion, Adjustable....55%
Iwan's Champion, Stationary....45%

Sidewalk—
Star Socket, All Steel..₰ doz. $4.05 net
Star Shank, All Steel..₰ doz. $3.24 net
W. & C. Shank, All Steel, ₰ doz., 7½ in., $3.00; 8 in., $3.25.

Cleavers, Butchers'—
Foster Bros....30%
New Haven Edge Tool Co.'s....45%
Fayette R. Plumb....30%
L. & I. J. White....30%

Clippers, Horse and Sheep—
Chicago Flexible Shaft Company: (20%)
'98 Chicago Horse, each....$8.75
1902 Chicago Horse, each..$10.75
20th Century Horse, each..$5.00
Lightning Belt Horse, each..$15.00
Chicago Belt Horse, each..$20.00
Stewart's Enclosed Gear Horse, each....$4.75
Stewart's Patent Sheep Shearing Machine, each....$12.75

Clips, Axle—
Regular Styles, list July 1, '05.80%

Cloth and Netting, Wire
—See *Wire, &c.*

Cocks, Brass—
Hardware list:
Compression, Plain Bibbs, Globe, Kerosene, Racking, &c., Cocks....70@70&10&5%

Coffee Mills—
See *Mills, Coffee.*

Collars, Dog—
Nickel Chain, Walter B. Stevens & Son's list....40%
Leather, Walter B. Stevens & Son's list....40%

Combs, Curry—
Metal Stamping Co....40%

Mane and Tail—
Covert's Saddlery Works....60&10%

Compasses, Dividers, &c.
Ordinary Goods....75&5@75&10%
Bemis & Call Hdw. & Tool Co.:
Dividers....65%
Calipers, Double....65%
Calipers, Inside or Outside....65%
Calipers, Wing....60%
Compasses....50%
Wm. Schollhorn Co.:
Excelsior Dividers....60%
Lodi Dividers....75%

Conductor Pipe,—
L. C. L. to Dealers:

Territory:	*Galvanized Galv. Steel.*	*Charcoal Iron.*	*Copper. 1½, 16&20 oz.*
Eastern:			
	70&10%	60&7½%	40&10%
Central:			
	70&20&5%	60%	40&7½%
Western and Southern:			
	65&10%	50&10&2½%	40&5%

Galvanized

	Galv. Steel.	*Charcoal Iron.*	*Copper. 1½, 16&20 oz.*
So. Western			
	62½&7½%	50&5%	40&2½%

Terms, 60 days; 2% cash 10 days. Factory shipments generally delivered.
See also Eave Troughs.

Coolers, Water—

Gal. each..	2	3	4	6	8
Labrador ...	$1.20	$1.50	$1.80	$2.10	$2.70
Gal.	3	4	6	8	
Iceland, ea.	$1.80	$2.10	$2.40	$3.00	
Gal.	2	3	4	6	8
Galvanized, ea.	$1.85	$2.00	$2.25	$2.90	$3.90
Galvanized, Lined, side handles, Gal.	2	3	4	6	8
Each	$1.95	$2.15	$2.40	$3.30	$4.15
White Enameled					25%
Agate Lined					25%

Coopers' Tools—
See *Tools, Coopers'.*

Coppers' Soldering—
Soldering Coppers, 3 lbs. to pair and heavier, 23@24¢; lighter than 3 lbs. to pair....25@26¢

Cord—Sash—
Braided, Drab....lb. 35¢
Braided, White, Com., Nos. 8 to 12, 2¼¢; No. 7, 2½¢; No. 6, 2½¢.
Cable Laid Italian....lb., A, 18¢; B, 16¢
Common India....lb. 10@10½¢
Cotton Sash Cord, Tw'ted..17@19¢
Patent Russia....lb..@11¢
Cable Laid Russia....lb..@15¢
India Hemp, Braided..lb..@18¢
India Hemp, Twisted..lb. 12@13¢
Patent India, Twisted..lb. 12@13¢
Anniston Cordage Co.: ₰ lb, solid Braided, Nos. 8 to 12, $0.24; No. 7, $0.24½; No. 6, $0.25½; ₰ doz., 50 ft.: Oriole, $2.00; 50 ft., Columbia, $0.85; 50 ft., Victors, $1.00; 50 ft., 6-Thread, $1.10; 60 ft., 3-Thread, $0.95; 50 ft., Manila, $1.40; 60 ft., Jute, $0.75.
Pearl Braided, cotton, No. 6, ₰ lb, 25½¢; No. 7, 25¢; Nos. 8 to 12, 24½¢
Eddystone Braided, Nos. 8, 9 and 10, 25¢; 7, 25½¢; 6, 26½¢.
Harmony Cable Laid Italian, Nos. 7 to 10....₰ lb 23 ¢
Peerless:
Cable Laid Italian....16 ¢
Cable Laid Russian....14 ¢
Cable Laid India....12 ¢
Braided India....18 ¢
Pullman:
Wire Sash Cord....10%
Sash Cord Attachments, per doz.10¢
Samson, Nos. 8 to 12:
Braided, Drab Cotton....₰ lb 40 ¢
Braided, Italian Hamp....₰ lb 40 ¢
Braided, Linen....₰ lb 55 ¢
Braided, White Cotton or Spot....₰ lb 35 ¢
Massachusetts, White....₰ lb 30 ¢
Massachusetts, Drab....₰ lb 35 ¢
Phoenix, White, Nos. 8 to 12, 27¢; No. 7, 27½¢; No. 6, 28½¢.
Silver Lake:
A, Drab....45 ¢
A, White....40 ¢
B, Drab....40 ¢
B, White....35 ¢
Italian Hemp....40 ¢
Linen....57½ ¢
See also Chain and Ribbon.

Wire, Picture—
List Oct., '00....85&10&10@85&10&10&5%
Hendryx Standard Wire Picture Cord, 85&10%

Cradles—
Grain....40&12½%

Crayons—
White Round Crayons, gr. 6@6½¢
Cases, 100 gro., $5.00 at factory.
D. M. Steward Mfg. Co.: (20%, Case lots, 20%)
Genuine, Per gro.
Round Pencil, $2.25; Square Pencil, $1.75; Flat Crayon, $2.50; Metal Workers' Crayon, $3.00; Rolling Mill Crayon, $3.00.
Compo. Per gro.
Round Pencil, $1.50; Square Pencil, $1.50; Flat Crayon, $1.50; Metal Workers' Crayon, $2.50; Rolling Mill Crayon, $2.50; Railroad Crayon, $4.00; Compo. Crayon, $4.00. (Case lots, 50&20%)
Zelnicker's Lumber:
Red, Blue, Green....₰ gro. $6.50
Black....₰ gro. $4.00
See also Chalk.

Crooks, Shepherds'—
Fort Madison, Heavy....₰ doz. $7.00
Fort Madison, Light....₰ doz. $6.50

Crow Bars—See *Bars, Crow.*

Cultivators—
Victor Garden....50%

Cutlery, Table—
International Silver Company:
No. 12 M'd'm Knives, 1847..₰ doz. $3.50
Star, Eagle, Rogers & Hamilton and Anchor....₰ doz. $3.00
Wm. Rogers & Son....₰ doz. $2.50

Cutters—Glass—
H. H. Mayhew Co....40%
Red Devil....50%
Smith & Hemenway Co....50%
Woodward....40%

Meat and Food—
American....30%

Nos.	1	2	3	4	B	5
Each	$5	$7	$10	$25	$50	$60

Enterprise:

Nos.	5	10	12	22	32
Each	$2	$3	$2.75	$4.50	$6

25@25&7½%
No. 202; $1.50....40&7½%
Dixon's....₰ doz. 40@50%

Nos.	1	2	3	4
	$14.00	$17.00	$19.00	$30.00

Ideal....40&10@50%
Little Giant....₰ doz. 40@50%

Nos.	305	310	312	320	322
	$35.00	$48.80	$44.80	$72.00	$68.00

N. E. Food Choppers....25%
New Triumph No. 605, ₰ doz. $24.00....40@50%
Russwin Food, No. 1, $24.00; No. 2, $27.00....45&10&10%
Woodruff's....₰ doz. 40@50%
Nos....100 150
$15.00 $18.00
Enterprise Beef Shavers....25@30%

Slaw and Kraut—
Henry Disston & Sons:
Slaw, Corn Grater, &c....40%
Kraut Cutters, 24 x 7, 26 x 8, 30 x 9....55%
Kraut Cutters, 36 x 12, 40 x 12....40%
J. M. Mast Mfg. Co.:
Slaw Cutters, 1 Knife....₰ doz. $3.00
Combined Slaw Cutter and Corn Grater....₰ doz. $4.00
Tucker & Dorsey Mfg. Co.:
Kraut Cutters....40%
Slaw Cutters, 1 Knife..₰ gr. $18@$20
Slaw Cutters, 2 Knife..₰ gr. $22@$30

Tobacco—
All Iron, Cheap..doz. $4.25@$4.50
Enterprise....25@30%
National, ₰ doz., No. 1, $21; No. 2, $18....40%
Sargent's, ₰ doz., No. 2....60%
Sargent's, Nos. 12 and 21....60&10%

Washer—
Appleton's, ₰ doz., $16.00....50&10&10%

Diggers, Post Hole, &c.—
Dalbey Post Hole Auger..per doz. $9.00
Iwan's Imp'ved Post Hole Auger.40&5%
Iwan's Vaughan Pattern Post Hole Augers....₰ doz. $6.25
Iwan's Perfection Post Hole Digger....₰ doz. $8.25
Iwan's Split Handle Post Hole Diggers....₰ doz. $7.25
Kohler's Universal....₰ doz. $14.00
Kohler's Little Giant....₰ doz. $12.00
Kohler's Hercules....₰ doz. $10.00
Kohler's Invincible....₰ doz. $9.00
Kohler's Rival....₰ doz. $8.00
Kohler's Pioneer....₰ doz. $7.00
Never-Break Post Hole Diggers, ₰ doz., $24.00....60%
Samson, ₰ doz. $34.00....25%

Dividers—See *Compasses.*

Drawers, Money—
Tucker's Pat. Alarm Till No. 1, ₰ doz., $18; No. 2, $15; No. 3, $12; No. 4, $18.

Drawing Knives—
See *Knives, Drawing.*

Dressers, Emery Wheel—
Diamond Emery Wheel Dressers....35%
Diamond Wheel Dresser Cutters....35%

Drills and Drill Stocks—
Common Blacksmiths' Drill, each....$1.50@$1.75
Breast, Millers Falls....15&10%
Breast, P., S. & W....40%
Goodell Automatic Drills..40&5@40&10%
Johnson's Automatic Drills, Nos. 2 and 3....16⅔%
Johnson's Drill Points....16⅔%
Millers Falls Automatic Drills..33⅓&10%
Ratchet, Curtis & Curtis....25%
Ratchet, Parker's....40%
Ratchet, Weston's....40%
Ratchet, Weston's, Style H Improved....40%
Ratchet, No. 012....40%
Ratchet, Whitney's, P., S. & W..50%
Whitney's Hand Drill, No. 1, $10.00; Adjustable, No. 10, $12.00....33⅓%

Twist Drills—
Bit Stock....60&10&10@70%
Taper and Straight Shank....60&10@60&10&5%

Drivers, Screw—
Screw D'ver Bits, per doz..45@50¢
Balsey's Screw Holder and Driver, ₰ doz., 2½-in., $6; 4-in., $7.50; 6-in., ₰....50%
Buck Bros.' Screw Driver Bits....30%
Champion....50%
Edson....60%
Fray's Hol. H'dle Sets, No. 3, $12..50%
Gay's Double Action Ratchet....35%
Goodell's Auto..50&10&10@50&10&10&5%
Hurwood....40%
Mayhew's Black Handle....40%
Mayhew's Monarch....40&10%
Millers Falls, Nos. 20 and 21....25&10%
Millers Falls, Nos. 11, 12, 41, 42..15&10%
New England Specialty Co....50&10%
Sargent & Co.'s:
Nos. 1 and 60....50&10&10%
Nos. 50, 53 and 55....60&10%
Nos. 20 and 40....70&10%
Smith & Hemenway Co....40&5%
H. D. Smith & Co.'s Perfect H'dle.40%
Stanley R. & L. Co.'s:
No. 64, Varn. Handles....65%
No. 86....75%
Victor....55%
Defiance....70%
Swan's:
Nos. 7565 to 7568....50%
No. 7540....40&10%

Eave Trough, Galvanized—

Territory.	*L. C. L. Galvanized Galv. Steel.*	*Charcoal Iron.*	*Copper. 1½, 16&20 oz.*
Eastern:			
	80&2½%	70&7½%	40&10%
Central:			
	75&10&7½%	70%	40&7½%
Western and Southern:			
	70&20&7½%	60&15&2½%	40&5%
So. Western:			
	70&20%	65&2½%	40&2½%

Terms.—2% for cash. Factory shipments generally delivered.
See also Conductor Pipe and Elbows.

Elbows and Shoes—
Factory shipments, all territories: Galv. Steel and Galv. C. I. Gauge....60&10%
No. 26....50%

No. 24.....25%
No. 22.....10%
Copper.....50%

Elbows, Stove Pipe—
Dover, one piece.....40%
Perfect Elbows (R. M. Co.).....40%

Emery, Turkish—
	4 to 46	5 to 220	Flour.
Kegs ..... *lb.*	5 ¢	5½ ¢	3½ ¢
½ *Kegs* ..... *lb.*	5½ ¢	5¾ ¢	3¾ ¢
¼ *Keys* ..... *lb.*	5½ ¢	6 ¢	4 ¢
10-lb. cans,			
10 in case	6¼ ¢	7 ¢	6 ¢
10-lb. cans, less			
than 10	10 ¢	10 ¢	8 ¢
Less quantity	10 ¢	10 ¢	8 ¢

NOTE.—In lots 1 to 3 tons a discount of 10% is given.

Extractors, Lemon Juice
—See *Squeezers, Lemon.*

Fasteners, Blind—
Zimmerman's .....50&10%
Walling's .....40&10%

Cord and Weight—
Ives 40%

Faucets—
Cork Lined.....60@50&10%
Metallic Key, Leather Lined..
60&10@70%
Red Cedar.....40&10@50%
Petroleum.....70&10@75%
B. & L. B. Co.:
Metal Key.....60&10%
Star.....60%
West Lock.....50&10%
John Sommer's Peerless Tin Key....40%
John Sommer's Boss Tin Key.....50%
John Sommer's Victor Mtl. Key.50&10%
John Sommer's Duplex Metal Key..60%
John Sommer's Diamond Lock.....40%
John Sommer's I. X. L. Cork Lined...50%
John Sommer's Reliable Cork Lined..
50&10%
John Sommer's Chicago Cork Lined.60%
John Sommer's O. K. Cork Lined...50%
John Sommer's No Brand, Cedar....50%
John Sommer's Perfection, Cedar....40%
McKenna, Brass:
Burglar Proof, N. P.....25%
Improved, ¾ and ⅞ inch.....25%
Self Measuring:
Enterprise, ℔ doz. $36.00.....40&10%
Lane's, ℔ doz. $36.00.....40&10%
National Measuring, ℔ doz. $36.40&10%

Felloe Plates—
See *Plates, Felloe.*

Files— Domestic—
List revised Nov. 1, 1899.
Best Brands.....70&10@75&10%
Standard Brands.75&10@75&10&10%
Lower Grade....75&10&10@80&10%

Imported—
Stubs' Tapers, Stubs' list, July 24, '97.....33 1-3@40%

Fixtures, Fire Door—
Richards Mfg. Co.:
Universal, No. 103.....$3.75
Special, No. 104.....$3.75
Fusible Links, No. 96.....50%
Expansion Bolts, No. 107.....60&10%

Grindstone—
Net Prices:

Inch	15	17	19	21
Per doz	$3.25	3.75	4.25	4.75

P., S. & W. Co.....30&10@40%
Reading Hardware Co.....60%
Sargent's 70%
Stowell's Giant Grindstone Hanger..
℔ doz. $6.00
Stowell's Grindstone Fixtures, Extra Heavy.....50&10&10%
Stowell's Grindstone Fixtures, Light.

Fodder Squeezers—60&10%
See *Compressors.*

Forks—
NOTE.—Manufacturers are selling from the list of September 1, 1904, but many jobbers are still using list of August 1, 1899, or selling at net prices.
Iowa Dig-Ezy Potato.....60&10%
Victor, Hay.....60&15&2½%
Victor, Manure.....66⅔%
Victor, Header.....65%
Champion, Hay.....66⅔%
Champion, Header.....65%
Champion, Manure.....60&15&2½%
Columbia, Hay.....60&20%
Columbia, Manure.....70%
Columbia, Spading.....70&12½%
Hawkeye Wood Barley.....40%
W. & C. Potato Digger.....60&10%
Acme Hay.....60&20%
Acme Manure, 4 tine.....60&10&5%
Dakota Header.....60&20%
Jackson Steel Barley.....60&20%
Kansas Header.....65%
W. & C. Favorite Wood Barley.....40%
Plated.—See Spoons.

Frames— Saw—
White, S'g't Bar, per doz.75@80¢
Red, S'g't Bar, per doz..$1.00@1.25
Red, Dbl. Brace, per doz.$1.40@1.50

Freezers, Ice Cream—

Qt.	1	2	3	4	6
Each	$1.30	$1.60	$1.90	$2.20	$2.80

Fruit and Jelly Presses—
See *Presses, Fruit and Jelly.*

Fry Pans—See *Pans, Fry.*

Fuse— *Per 1000 Feet.*
Hemp.....$2.75
Cotton.....3.20
Waterproof Sgl. Taped..3.65
Waterproof Dbl. Taped..4.40
Waterproof Tpl. Taped..5.15
10&2½%

Gates, Molasses and Oil—
Stebbins' Pattern.....80&10%

Gauges—
Marking, Mortise, &c..50&10@60%
Chapin-Stephens Co.:
Marking, Mortise, &c.50&10@50&10&10%
Scholl's Patent.....50&10@50&10&10%
Door Hangers.....50@50&10%
Stanley R. & L. Co.'s Butt and Rabbet Gauge.....35%
Marking and Mortise.....60%
Wire, Brown & Sharpe's.....25%
Wire, Morse's.....25%
Wire, P., S. & W. Co.....33⅓%

Gimlets— Single Cut—
Numbered assortments, per gro.
Nail, Metal, No. 1, $2.00; 2, $2.30
Spike, Metal, No. 1, $4.00; 2, $4.30
Nail, Wood Handled, No. 1, $2.30; 2, $2.60
Spike, Wood Handled, No. 1, $4.30; 2, $4.60

Glass, American Window
See *Trade Report.*

Glasses, Level—
Chapin-Stephens Co.....60@60&10&10%

Glue, Liquid Fish—
Bottles or Cans, with Brush..
25&10@50%
International Glue Co. (Martin's)..40%

Grease, Axle—
Common Grade....*gro. $4.50@6.00*
Dixon's Everlasting..10-lb pails, ea. 85¢
Dixon's Everlasting, in boxes, ℔ doz.
1 lb, $1.20; 2 lb, $2.00
Helmet Hard Oil.....25%

Griddles, Soapstone—
Pike Mfg. Co.....33⅓@33⅓&10%

Grindstones—
Bicycle Emery Grinder.....$6.50
Bicycle Grindstones, each.....$2.50@3.00
Pike Mfg. Co.:
Improved Family Grindstones, per inch, ℔ doz.....$2.00 } 33⅓
Pike Mower and Tool Grinder, each.....$6.00 } 33⅓

Grips, Nipple—
Perfect Nipple Grips.....40&10&2%

Halters and Ties—
Cow Ties.....60&10@60&10&5%
Covert Mfg. Co.:
Web.....45%
Jute Rope.....45%
Sisal Rope.....33⅓%
Cotton Rope.....45%
Hemp Rope.....45%
Covert's Saddlery Works:
Web and Leather Halters.....70%
Jute and Manila Rope Halters....70%
Sisal Rope Halters.....60&20%
Jute, Manila and Cotton Rope Ties.....70%
Sisal Rope Ties.....60&10%
Oneida Community:
Am. Coil and Halters.....40@40&5%
Am. Cow Ties.....45@50%
Niagara Coil and Halters..45@50&5%
Niagara Cow Ties....45&5@50&10&5%
E. T. Rugg & Co.:
Leather Halters.....50%
Web Halters and Webbing.....60%
Jute and Sisal Rope Halters.....60%
Jute and Sisal Horse and Cattle Ties.....60%
Cotton Horse Ties.....60%
Livery Ties, Braided.....60%

Hammers—
Handled Hammers—
Heller's Machinists'...40&10@40&10&10%
Heller's Farriers.....40&10@40&10&10%
Magnetic Tack, Nos. 1, 2, 3, $1.25, $1.50, $1.75.....50%
Peck, Stow & Wilcox, Steel.....50%
Fayette R. Plumb:
Plumb, A. E. Nail.....
33⅓&7½@33⅓&10&7½%
Engineers' and R. S. Hand.....
50&7½&5@50&10&7½&5%
Machinists' Hammers.50&5@50&10&5%
Riveting and Tinners'.....
40&2½@40&10&2½%
Sargent's C. S. New List.....40%

Heavy Hammers and Sledges—
Under 3 lb., per lb., 50¢...80&10%
3 to 5 lb., per lb., 40¢.....80&10%
Over 5 lb., per lb., 30¢..80&10&10%
Wilkinson's Smiths'...lb. 9½@10¢

Handles—
Agricultural Tool Handles
Axe, Pick, &c....60&10@60&10&5%
Hoe, Rake, &c.....45@50%
Fork, Shovel, Spade, &c.:
Long Handles.....45@50%
D Handles.....50@50&5%
Cross-Cut Saw Handles—
Atkins'.....40%
Champion.....45@45&10%
Disston's.....50%
Mechanics' Tool Handles—
Auger, assorted...*gro. $2.50@3.00*
Brad Awl.....*gro. $1.65@$1.75*
Chisel Handles:
Apple Tanged Firmer, gro. assorted.....*$2.40@$2.65*
Hickory Tanged Firmer, gro. assorted.....*$2.15@$2.40*
Apple Socket Firmer, gro. assorted.....*$1.75@$1.95*
Hickory Socket Firmer, gro. assorted.....*$1.45@$1.60*
Hickory Socket Framing, gro. assorted.....*$1.60@$1.75*
File, assorted.....gro. *$1.30@$1.40*
Hammer, Hatchet, &c.
60&10@60&10&5%
Hand Saw, Varnished, doz. 80&85¢; Not Varnished...*65@75¢*
Plane Handles:
Jack, doz. 30¢; Jack, Bolted.75¢
Fore, doz. 45¢; Fore, Bolted.90¢
Chapin-Stephens Co.:
Carving Tool.....40@40&10%
Chisel.....65@65&10%
File and Awl.....65@65&10%
Saw and Plane.....40@40&10%
Screw Driver.....40@40&10%
Millers Falls Adj. and Ratchet Auger Handles.....15&10%
Nicholson Simplicity File Handle...
℔ gro. $0.85@$1.50

Hangers—
NOTE—Barn Door Hangers are generally quoted per pair, without track, and Parlor Door Hangers per double set with track, &c.

Allith Mfg. Co.:
Reliable, No. 1.....per doz. $3.00
Reliable, No. 2.....per doz. $9.00
Chicago Spring Butt Co.:
Friction.....25%
Oscillating.....25%
Big Twin.....25%
Chisholm & Moore Mfg. Co.:
Baggage Car Door.....50%
Elevator.....50%
Railroad.....50%
Cronk & Carrier Mfg. Co.:
Loose Axle.....60&10%
Roller Bearing.....70%
Griffin Mfg. Co.:
Solid Axle, No. 10, $12.00.....70%
Roller Bearing, No. 11, $15.00.70%
Roller Bearing, Ex. Hy., No. 22, $18.00.....70%
Hinged Hangers, $16.00....60&10%
Lane Bros. Co.:
Parlor, Ball Bearing.....$4.00
Parlor, Standard.....$3.15
Parlor, No. 105.....$2.85
Parlor, New Model.....$2.80
Parlor, New Champion.....$2.25
Barn Door, Standard.....60&5%
Hinged.....net $6.40
Covered.....60&27%
Special.....70&5%
Lawrence Bros.:
Advance.....60&10%
Cleveland.....75%
Clipper, No. 75.....60%
Crown.....60&10%
Easy Parlor Door, Dbl. Sets, $2.50; Single Sets, $1.25.
Giant.....60&5%
Hummer.....70&5%
New York.....60&10%
Peerless.....75%
Sterling.....60&10%
McKinney Mfg. Co.:
No. 1, Special, $15.....60&10%
No. 2, Standard, $18.....60&10%
Hinged Hangers, $16.....50%
Meyers' Stayon Hangers.....60&5%
Richards Mfg. Co.:
Hangers, Nos. 47, 48, 147, 247, 60&5%
Pioneer Wood Track No. 3..$2.00
Ball B'r'g St'l Track No. 10.50&10%
Roller B'r'g St'l Track No. 12.$2.15
Roller B'r'g St'l Track No. 13.$2.30
Roller B'r'g, Nos. 39, 41, 43, 70&10%
Hero, Adj. Track No. 19..50&10%
Adjustable Track Tandem Trolley Track No. 16.....50&10%
Seal, Steel Track No. 8.....$2.25
Auto Adj. Track No. 22..50&10%
Trolley B. D. No. 17.....$1.25
Trolley F. D. No. 120.....$2.10
Trolley F. D. No. 121.....$2.25
Trolley F. D. No. 150.....$2.35
Safety Underwriters F. D. No. 101.....50%
Tandem No. 44..2½ and 3 60&10%
Palace, Adjustable Track No. 132.....50&10%
Royal, Adjustable Track No. 122.....50&10%
Ives' Wood Track No. 1.....$2.00
Trolley B. D. No. 20.....50&10%
Trolley B. D. No. 24.....$1.30
Trolley B. D. No. 27.....$1.40
Trolley B. D. No. 28.....$1.60
Roller Bearings, Nos. 37, 38, 39, 41, 43; 44, Sizes 1 and 2..70&10%
Anti-friction, No. 42.....60&10%
Anti-friction, No. 44, Sizes 2½ and 3.....60&10%
Hinged Tandem No. 48....60&5%
Folding Door B. B. Swivel No. 135.....40%
Safety Door Hanger Co.:
Storm King Safety.....60%
U. S. Standard Hinge.....60%
Stowell Mfg. & Foundry Co.:
Acme Parlor Ball Bearing....40%
Ajax Hinge Door.....60%
Apex Parlor Door.....50&10&5%
Atlas.....60%
Baggage Car Door.....50%
Climax Anti-Friction.....50&10%
Elevator.....40%
Express.....50%
Freight Car Door.....60%
Interstate.....60&10%
Lundy Parlor Door.....50&10%
Magic.....60%
Matchless.....60&10%
Nansen.....70&5%
Parlor Door.....50&10%
Railroad.....50&10%
Rex Hinge Door.....60%
Street Door.....50%
Steel, Nos. 300, 401, 500....50&10%
Underwriters' Fire Door....40%
Wild West Warehouse Door..50%
Zenith for Wood Track....50&10%
A. L. Sweet Iron Works:
Check Back.....70%
Climax Anti-Friction.....50&10%
Eagle.....70%
Hylo Hinge.....60%
New Perfection.....60%
Pilot.....60%
Pilot Hinge.....60%
Rider Wooster.....65%
Western Pattern.....70%
Taylor & Boggis F'y Co.'s Kidder's Roller Bearing.50&15&10&5%

Extra 5&10% often given.

Hangers— Garment—
Pullman Trouser, ℔ gro., 1 pair Flat Aluminoy, $9.00; 1 pair Round Nickeled, $9.00; 4 pair Round Nickeled, $27.00; 1 pair Flat Gun Metal, $12.00; 1 pair Flat Black Enameled, $7.50; 1 pair Wood Clamp, $13.00; Skirt Hangers, Folding, per gro., $21.00; Coat Hangers, Folding, per gro., $8.00; Garment Hanger Rods, Round Nickeled, per gro., $15.00; Garment Hanger Loops, Round Nickeled, per gro.....$15.00
Victor Folding.....℔ gro. $9.60
Western, W. G. Co.....70&10%

Gate—
Myers' Patent Gate Hangers, ℔ doz. net.....$4.50

Joist and Timber—
Lane Bros. Co.....30%

Hasps—
Griffin's Security Hasp.....50%
McKinney's Perfect Hasp, ℔ doz..50%

Hatchets—
Regular list, first quality....*50%*
Second quality $1.00 per doz. less than first quality.

Heaters, Carriage—
Clark, No. 5, $1.75; No. 5B, $2.00; No. 3, $2.25; No. 3D, $2.75; No. 7D, $3.00; No. 5E, $3.25; No. 1, $3.50.....15%
Clark Coal, ℔ doz. $0.75.....10%

Hinges—
Blind and Shutter Hinges—
Surface Gravity Locking Blind:
(Victor; National; 1868 O. P.; Niagara; Clark's O. P.; Clark's Tip; Buffalo.)

No.	1	3	5
Doz. pair	$0.75	1.35	2.70

Mortise Shutter:
(L. & P., O. S., Dixie, &c.)

No.	1	1½	2	2½
Doz. pair	$0.70	.65	.60	.55

Mortise Reversible Shutter (Buffalo, &c.):

No.	1	1½	2
Doz. pair	$0.70	.65	.60

North's Automatic Blind Fixtures, No. 2, for Wood, $9.00; No. 3, for Brick, $11.50.....10%
Charles Parker Co.....70@75%
Parker Wire Goods Co.:
Hale & Benjamin Automatic Blind Hinges.....20%
Hale's Blind Awning Hinges, No. 110, for wood, $9.00; No. 111, for brick, $9.00.....20%
Reading's Gravity.....60%
Sargent's, Nos. 1, 3, 11 and 13..75&10%
Stanley's Steel Gravity Blind Hinges, ℔ doz. sets, without screws, $0.90; with screws, $1.20.
Wrightsville Hardware Co.:
O. S., Lull & Porter.....75&10&5%
Acme, Lull & Porter.....75&10%
Queen City Reversible.....75&10%
Shepard's Noiseless, Nos. 60, 65, 55.....75&10%
Niagara, Gravity Locking, Nos. 1, 3 & 5.....75&10&5%
1868, Old Pat'n, Nos. 1, 3 & 5....
75&10&5%
Tip Pat'n, Nos. 1, 3 & 5..75&10&5%
Buffalo Gravity Lockin', Nos. 1, 3 & 5.....75&10&5%
Shepard's Double Locking, Nos. 20 & 25.....70%
Champion Gravity Locking, No. 75.75%
Steamboat Gravity Locking, No. 10.75%
Pioneer, Nos. 060, 45 & 5½.....75%
Empire, Nos. 101 & 103.....70%
W. H. Co.'s Mortise Gravity Locking, No. 2.....60%

Gate Hinges—
Clark's or Shepard's—Doz. sets:

No.	1	2	3
Hinges with L't'chs.	$2.00	2.70	5.00
Hinges only	1.40	2.05	3.80
Latches only	.70	.70	.35

New England:
With Latch.....*doz.* ....@$2.00
Without Latch...*doz.* ....@$1.60
Reversible Self-Closing:
With Latch.....*doz.* ....@$1.75
Without Latch...*doz.* ....@$1.35
Western:
With Latch.....*doz. $1.75*
Without Latch.....*doz. $1.15*
Wrightsville Hardware Co.:
Shepard's or Clark's, doz. sets,

Nos.	1	2	3
Hinges with Latches	$2.00	2.70	5.00
Hinges only	1.40	2.05	3.80
Latches only	.70	.70	1.35

Pivot Hinges—
Bommer Bros. Pivot.....40%
Lawson Mfg. Co. Matchless.....45%

Spring Hinges—
Holdback, Cast Iron...*$6.50@$7.00*
Non-Holdback, Cast Iron$6.25@$6.75
J. Bardsley:
Bardsley's Non-Checking Mortise Floor Hinges.....25%
Bardsley's Patent Checking..15%
Bommer Bros.:
Bommer Ball Bearing Floor Hinges.....40%
Bommer Spring Hinges.....40%
No. 999 Wrot. Steel Hold Back, ℔ gr. $9.00
Chicago Spring Butt Co.:
Chicago Spring Hinges.....25%
Triple End Spring Hinges....50%
Chicago (Ball Bearing) Floor Hinge.....50%
Garden City Engine House....25%
Keene's Saloon Door.....25%
Columbian Hardware Co.:
Acme, Wrought Steel.....30%
Acme, Brass.....25%
American.....30%
Columbia, No. 14.....℔ gr. $9.00
Columbia, No. 18.....℔ gr. $25.00
Columbia, Adjustable, No. 7, ℔ gr. $12.00
Gem, new list.....30%
Clover Leaf.....℔ gr. $12.00
Oxford, new list.....30%
Lawson Mfg. Co., Matchless....30%
Richards Mfg. Co.:
Superior Double Acting Floor Hinges.....40%
Shelby Spring Hinge Co.:
Buckeye All Steel Holdback Screen Door.....℔ gr. $9.00
Ball Bearing Floor Hinge....50%
Ohio Detachable Screen Door Hinge.....℔ gr. $12.00
Superior Spring Hinge Co.:
Superior Floor Hinges.....33⅓%
The Stover Mfg. Co.:
Ideal, No. 16, Detachable, ℔ gr. $12.50
Ideal, No. 4.....℔ gr. $9.00
New Idea No. 1.....℔ gr. $9.00
New Idea, Double Acting....45%
New Idea Floor.....45%

Extra 10% often given on most of these Hinges.

Van Wagoner:
Ball Bearing.....25%
No. 777 Sh't Steel Holdb'k. ℔ gro. pr. $9

Wrought Iron Hinges—
Strap and T Hinges, &c., list December 20, 1904:
Light Strap Hinges...65%
Heavy Strap Hinges..75%
Light T Hinges.....60%
Heavy T Hinges.....55%
Extra H'y T Hinges..70%
Hinge Hasps.....45%
Cor. Heavy Strap....75%
Cor. Ex. Heavy T..70&10%

Extra 10&5% 10&10%

Screw Hook and Strap. { *6 to 12 in.* .lb. 3¾¢ ; *1½ to 20 in.* .lb. 3½¢ ; *22 to 36 in.* .lb. 3¼¢

Screw Hook and Eye:
¾ to 1 inch.....lb. 6½¢
⅝-inch.....lb. 7½¢
½-inch.....lb. 8½¢

Hitchers, Stall—
Covert Mfg. Co., Stall Hitchers..30&2½

Hods— Coal—
Per doz.

Inch	*15*	*16*	*17*	*18*
Galv. Open	$2.50	2.75	3.00	3.25
Jap. Open	$1.90	2.10	2.25	2.55
Galv. Funnel	$3.00	3.30	3.60	3.90
Jap. Funnel	$2.45	2.65	2.85	3.30

Masons' Etc.—
Cleveland Wire Spring Co.:
Steel Brick, No. 162.....each $0.95
Steel Mortar, No. 158.....each $1.25

Hoes— Eye—
Scovil and Oval Pattern.....
60&10@60&10&10%
Grub, list Feb. 23, 1899.....
70&10@75&10%
D. & H. Scovil.....33⅓%

Handled—
NOTE.—Manufacturers are selling from the list of September 1, 1904, but many jobbers are still using list of August 1, 1899, or selling at net prices.

Cronk's Weeding No. 1, $2.00; No. 2, $2.25
Ft. Madison Cotton Hoe....70&10&10%
Ft. Madison Crescent Cultivator Hoe, ₱ doz.....70&10%
Ft. Madison Mattock Hoes:
Regular Weight.....₱ doz. 66⅔%
Junior Size.....₱ doz. $4.00
Ft. Madison Sprouting Hoe..₱ doz. 50%
Ft. Madison Dixie Tobacco Hoe.....
75&10&7½%
Kretsinger's Cut Easy.....70&10%
Warren Hoe.....45&10%
W. & C. Ivanhoe.....75&2%
B. B. 6 in., Cultivator Hoe.....$3.15
B. B., 6½ in.....$3.35
Acme Wedding.....₱ doz., net, $4.35
W. & C. L'tning Shuffle Hoe, ₱doz.$4.85

Hoisting Apparatus—
See *Machines, Hoisting.*

Holders— Bit—
Angular, ₱ doz. $24.00.....45&10%

Door—
Bardsley's.....45%
Empire.....50%
Pullman.....50%
Superior.....33⅓%

File and Tool—
Nicholson File Holders and File Handles.....33⅓@40%

Fruit Jar—
Triumph Fruit Jar Holder, ₱ gross, $10.80; ₱ doz.....$1.25

Hones—Razor—
Pike Mfg. Co., Belgian, German and Swaty.....50%

Hooks—Cast Iron—
Bird Cage, Reading.....40%
Bird Cage, Sargent's List.....60&10%
Ceiling, Sargent's List, Nos. 29, 32, 33, 129, 132, 133 and 135.....50&10&10%
Clothes Line, Reading List.....40%
Clothes Line, Sargent's List.50&20&10%
Coat and Hat, Sargent's List...50&10%
Clothes Line, Stowell's.....70%
Coat and Hat, Reading.....45&20%
Coat and Hat, Stowell's.....70%
Coat and Hat, Wrightsville.....65%
Harness, Reading List.....40%
Harness, Stowell's.....60%
School House, Stowell's.....70%

Wire—
Belt.....80&10@...%
Wire C. & H. Hooks:.....
75&10@75&10&10%
Columbian Hdw Co., Gem.....70&10%
Parker Wire Goods Co., King..70&10%
Van Wagoner, Coat and Hat.....70%
Western W. G. Co. Molding.....75%
Wire Goods Co.:
Acme.....60&10%
Chief.....70%
Crown.....75%
Czar.....65%
V Brace.....75%
Czar Harness.....50&10%

Wrought Iron—
Box, 6 in., per doz., $1.00; 8 in., $1.25; 10 in., $2.50.
Cotton.....*doz. $1.05@$1.25*
Wrought Staples, Hooks, &c.—
See Wrought Goods.

Miscellaneous—
Hooks, Bench, see *Stops, Bench.*
Bush, Light, doz. $4.75; Medium, $5.35; Heavy, $6.25
Grass, best, all sizes, per doz.$1.60
Grass, common grades, all sizes, per doz.....*$1.30*
Whiffletree.....*lb. 5¾@6¢*
Hooks and Eyes:
Brass.....60&5@60&10&5%
Malleable Iron.....70@70&10%
Covert Mfg. Co. Gate and Scuttle Hooks.....40%
Covert Saddlery Works' Self Locking Gate and Door Hook.....60%
Ft. Madison Cut-Easy Corn Hooks, ₱ doz. $3.25 net
Bench Hooks—See Bench Stops.
Corn Hooks—See Knives, Corn.

Horse Nails—
See *Nails, Horse.*

Horseshoes—
See *Shoes, Horses.*

Hose, Rubber—
Garden Hose, ¾-inch:
Competition.....*ft. 5 @ 6 ¢*
3-ply Guaranteed..ft. 8 @ 9 ¢
4-ply Guaranteed..ft. 10 @11 ¢
Cotton Garden, ¾-in., coupled:
Low Grade.....*ft. 8 @ 9 ¢*
Fair Quality.....*ft. 10 @11 ¢*

Irons— Sad—
From 4 to 10.....*lb. 3 @3½¢*
B. B. Sad Irons.....*lb. 3¼@3½¢*
Mrs. Potts', cents per set:

Nos.	*50*	*55*	*60*	*65*
Jap'd Tops	*68*	*65*	*78*	*75*
Tin'd Tops	*71*	*68*	*81*	*78*

New England Pressing.lb. 3¾@4¢

Pinking—
Pinking Irons.....*doz. 60¢*

Irons, Soldering
See *Coppers.*

Jacks, Wagon—
Covert Mfg. Co.:
Auto Screw.....30&2%
Steel.....45%
Covert's Saddlery Works:
Daisy.....60&10%
Victor.....60%
Lockport.....50%
Lane's Steel.....30&10&2%
Richards' Tiger Steel, No. 130...50&10%
Smith & Hemenway Co.'s.....25%

Kettles—
Brass, Spun, Plain.....20@25%
Enameled and Cast Iron—See Ware, Hollow.

Knives—
Butcher, Kitchen, &c.—
Foster Bros.' Butcher, &c.....30%
Wilkinson Shear & Cutlery Co.....60%

Corn—
Wilkinson Wilcut Brand Knives and Hooks.....60%
Withington Acme, ₱ doz., $2.65; Dent, $2.75; Adj. Serrated, $2.20; Serrated, $2.10; Yankee No. 1, $1.50; Yankee No. 2, $1.15.

Drawing—
Standard List.....75&5@75&10%
C. E. Jennings & Co., Nos. 45, 46..60%
Jennings & Griffin, Nos. 41, 42.....60%
Ohio Tool Co.'s.....70%
Swan's.....75%
Watrous.....16⅔%
L. & I. J. White.....20&5@25%

Hay and Straw—
Serrated Edge, per doz.$5.75@6.00
Iwan's Sickle Edge.....₱ doz. $9.50
Iwan's Serrated.....₱ doz. $10.00

Mincing—
Buffalo.....₱ gro. $13.00

Miscellaneous—
Farriers'.....*doz. $3.00@3.25*
Wostenholm's.....₱ doz. $3.00@3.25

Knobs—
Base, 2½-inch, Birch, or Maple, Rubber Tip.....*gro.$1.25@$1.50*
Carriage, Jap., all sizes.....
gro. 40@45¢
Door, Mineral.....*doz. 65@70¢*
Door, Por. Jap'd.....*doz. 70@75¢*
Door, Por. Nickel..*doz. $2.05@2.15*
Bardsley's Wood Door, Shutters, &c.15%
Picture, Sargent's.....60&10&10%

Lacing, Leather—
See *Belting, Leather.*

Ladders, Store, &c.—
Lane's Store.....25%
Myers' Noiseless Store Ladders....50%
Richards Mfg. Co.:
Improved Noiseless, No. 112.....50%
Climax Shelf, No. 113.....50%
Trolley, No. 109.....50%

Ladles, Melting—
L. & G. Mfg. Co. (low list).....25%
P. S. & W.....50%
Reading.....60%
Sargent's.....50&10%

Lanterns—Tubular—
Regular Tubular, No. 0.....
doz.$4.25@4.50
Lift Tubular, No. 0.....
doz.$4.75@5.00
Hinge Tubular, No. 0.....
doz.$4.75@5.00
Other Styles.....*40@40&5%*

Bull's Eye Police—
No. 1, 2¾-inch.....*$2.75@3.00*
No. 2, 3-inch.....*$3.00@3.25*

Lasts and Stands, Shoe—
Stowell's Atlas, Malleable Iron.....50%
Stowell's Badger, Cast Iron.....50%

Latches— Thumb—
Roggin's Latches, with screw..
doz. 35@40¢

Door—
Cronk & Carrier Mfg. Co., No. 101, ₱ doz. $2.30
Cronk & Carrier Mfg. Co., Latch, Hasp and Staples.....50%
Richards' Bull Dog, Heavy, No. 125.....50&5%
Richards' Trump, No. 127.....$1.50

Leaders, Cattle—
Small.....*doz. 50¢; large, 60¢*
Covert Mfg. Co.:
Cotton, Hemp and Jute, 45%; Sisal, 33⅓%.

Lifters, Transom—
R. & E.....33⅓%

Lines—
Wire Clothes, Nos. *18* *19* *20*
100 feet.....*$2.25* *2.00* *1.75*
75 feet.....*$1.75* *1.35* *1.10*
Anniston Waterproof Clothes, 50 ft., ₱ gro., $25.00; Gilt Edge, $23.00; Air Line, $23.00; Acme, $18.00; Alabama, $17.00; Empire, $16.00; Advance, $14.00; Eclipse, $13.50; Chicago, $11.50; Standard, $10.50; Columbia, $9.50; Allston, $13.50; Calhoun, $12.00.
Samson Cordage Works:
Solid Braided Chalk, Nos. 0 to 3..40%
Silver Lake Braided Chalk, No. 0, $6.00; No. 1, $6.50; No. 2, $7.00; No. 3, $7.50.....₱ gr. 20%
Masons' Lines, Shade Cord, &c.:
White Cotton, No. 3¼, $1.50; No. 4, $2.00; No. 4½, $2.50; Colors, No. 3¼, $1.75; No. 4, $2.25; No. 4½, $2.75; Linen, No. 3½, $2.50; No. 4, $3.50; No. 4½, $4.50.....20%
Tent and Awning Lines: No. 5, White Cotton, $7.50; Drab Cotton, $8.50.....20%
Clothes Lines, White Cotton: 50 ft., $2.75; 60 ft., $3.25; 70 ft., $3.75; 75 ft., $4.00; 80 ft., $4.25; 90 ft., $4.75; 100 ft., $5.25.....20%

Locks— Cabinet—
Cabinet Locks..33⅓@33⅓&7½%

Door Locks, Latches, &c.—
NOTE.—Net Prices are very often made on these goods.

Reading Hardware Co.....40%
R. & E. Mfg. Co.....40%
Sargent & Co.....40&10%
Stowell's Steel Door Latches.....30%

Elevator—
Stowell's.....30%

Padlocks—
Wrought Iron....75&10&5@80&5%
Net prices are general.
R. & E. Mfg. Co. Wrought Steel and Brass.....75&10%

Sash, &c.—
Ives' Patent:
Bronze and Brass.....62½%
Crescent.....50&10%
Iron.....62½%
Window Ventilating.....60%
Robison Patent Ventilating Sash Lock.....40%
Wrought Bronze and Brass.....55%
Wrought Steel.....55%
Pullman Patent Ventilating Lock..25%
Reading.....40%

Machines—Boring—
Com. Upr't, without Augers.$2.00
Com. Ang'l'r, without Augers.$2.25
Swan's Improved.....40&10%
Angular.
Jennings', Nos. 1 and 4.....35&5%
Millers' Falls.....5.75
Snell's, Rice's Pat. 2.50.....2.75

Corking—
Reisinger Invincible Hand Power.....
₱ doz. $48.00

Fence—
Williams' Fence Machines....each. $5.50

Hoisting—
Moore's Anti-Friction Differential Pulley Block.....30%
Moore's Hand Hoist, with Lock Brake.....20%

Ice Cutting—
Chandler's.....12½%

Washing—
Boss Washing Machine Co.: Per doz.
Boss No. 1.....$57.00
Boss Rotary.....$54.00
Champion Rotary Banner No. 1..$54.00
Standard Champion No. 1.....$48.00
Standard Perfection.....$26.00
Cinti Square Western.....$30.00
Uneeda American, Round.....$30.00

Mallets—
Hickory.....45&5@50%
Lignumvitæ.....45&5@50%
Tinners' Hickory and Applewood.....*doz. 45&5@50%*

Mangers, Stable—
Swett Iron Works.....50%

Mashers, Vegetable—
Western, W. G. Co., Potato....60&10%

Mats, Door—
Elastic Steel (W. G. Co.), new list..
50&10%
Keystone Wire Matting Co.:
Keystone.....50%
Ideal.....50%

Mattocks—
See *Picks and Mattocks.*

Milk Cans—See *Cans, Milk.*

Mills, Coffee, &c.—
Enterprise Mfg. Co.....25@30%
National list Jan. 1, 1902.....30%
Parker's Columbia & Victoria..50&10@6%
Parker's Box and Side.....50&10@60%
Swift, Lane Bros. Co.....30%

Mowers, Lawn—
NOTE.—Net prices are generally quoted
Cheapest.....*all sizes, $1.85@2.00*
Cheap.....*all sizes, $2.00@2.50*
Better Grade..*all sizes, $2.50@4.50*

	12	*14*	*16*	*18-in.*
High Grade	*$4.50*	*4.75*	*5.00*	*5.25*

Continental.....60&5%
Great American.....70%
Great American Ball B'r'g, new list.70%
Quaker City.....70%
Pennsylvania.....60&5%
Pennsylvania, Jr., Ball Bearing....60%
Pennsylvania, Golf.....50%
Pennsylvania Horse.....33⅓&5%
Pennsylvania Pony.....40&5%
Granite State:
Style A, Low Wheel....70&10&10&5%
Style B, Low Wheel.....70&10&5%
Style C, High Wheel.....70&10%
Style D, High Wheel.....70%
Philadelphia:
Styles M., S., C., K., T.....70&5%
Style A, all Steel.....60&5%
Style E, High Wheel.....70&10&5%
Drexel and Gold Coin, special list..50%

Nails—
Wire Nails and Brads, Miscellaneous.....*85&10@85&10&5%*
Cut and Wire. See *Trade Report.*
Hungarian, Finishing, Upholsterers' &c. See *Tacks.*

Horse—

Nos.	*6*	*7*	*8*	*9*	*10*	
Anchor	23	21	20	19	18	...40&5%
Champlain	28	26	25	24	23	.....50%
Coleman	13	12	12	11	11	.....net
New Haven	23	21	20	19	18	...40&3%

Western.....₱ lb 3¼¢
Jobbers' Special Brands.....
per lb .9@10¢

Picture—

	1½	*2*	*2½*	*3*	*3½ in.*
Brass H'd	*.45*	*.55*	*.60*	*.70*	*.. gro*
Por. Head	*1.10*	*1.10*	*1.10*		*.. gro*

Nippers—
See *Pliers and Nippers.*

Nuts—
Cold Punched: *Off list.*
Square, Blank or Tapped..
4.90@5.00¢
Hexagon, Blank or Tapped..
5.30@5.40¢
Square, Blank, C. & T.5.20@5.30¢
Hexagon, Blank, C. & T..
5.90@6.00¢
Hot Pressed:
Square, Blank.....*5.10@5.20¢*
Hexagon, Blank.....*5.50@5.60¢*
Square, Tapped.....*5.00@5.10¢*
Hexagon, Tapped.....*5.40@5.50¢*

Oakum—
Best.....lb. 6¼@6½¢
U. S. Navy.....lb. 5¾@6¢
Navy.....lb. 4½@5¢
Plumbers' Spun Oakum..3½@3¢
In carload lots ½¢ lb. off, f.o.b. New York.

Oil Tanks—See *Tanks, Oil.*

Oilers—
Brass and Copper.....50&10%
Tin or Steel.....70@70&5%
Zinc.....70@70&5%
Chase or Paragon:
Brass and Copper.....50&10%
Tin or Steel.....65&10%
Zinc.....65&10%
Malleable, Hammers' Imp'ed, Nos. 11, 12 and 13.....20%
Malleable, Hammers' Old Pattern, Nos. 1, 2 and 3.....50%
American Tube & Stamping Co.:
Spring Bottom Cans.....70@70&10%
Railroad Oilers, &c.....60@60&10%

Openers— Can— *Per doz.*
Sprague, Iron Handle....*30@35¢*
Sprague, Wood Handle...*35@40¢*
Sardine Scissors.....*$1.75@$3.00*
National.....50&10%
Stowell's Sprague.....₱ doz. 35@45¢
Vim Tin Shear and Can Opener, ₱ doz., 75c.; per gro., $7.50

Egg—
Nickel Plate.....₱ doz., $2.00
Silver Plate.....₱ doz., $4.00

Packing—
Asbestos Packing, Wick and Rope.....*17@22¢*

Rubber—
(Fair quality goods.)
Sheet, C. I.....*11@12¢*
Sheet, C. O. S.....*11@12¢*
Sheet, C. B. S.....*12@13¢*
Sheet, Pure Gum.....*40@45¢*
Sheet, Red.....*40@50¢*
Jenkins' '96, ₱ lb 80¢.....25@25&5%

Miscellaneous—
American Packing...*lb. 7@10 ¢*
Cotton Packing.....*lb. 16@25 ¢*
Italian Packing.....*lb. 9@12½¢*
Jute.....*lb. 4@ 4½¢*
Russia Packing.....*lb. 8@11 ¢*

Pails, Creamery—
R. M. Co., with gauges—No. 1, $6.25; No. 2, $6.50 ₱ doz.

Pails, Water, Well, &c.—
See *Buckets.*

Pans— Dripping—
Standard List.....*65&10%*

Fry—
Common Lipped:

Nos.	*1*	*2*	*3*	*4*	*5*
Per doz	*$0.75*	*0.80*	*0.90*	*1.10*	*1.30*

Refrigerator, Galva.—

Inch	*12*	*14*	*16*	*18*
Per doz	*$1.95*	*2.25*	*2.80*	*3.15*

Roasting and Baking—
Regal, R. M. Co., ₱ doz., Nos. 5, $4.50; 10, $5.25; 20, $5.75; 30, $6.25.
Savory, ₱ doz., net, Nos. 200, $9.00; 400, $15.00.
Simplex, ₱ gro.:

No.	40	50	60	140	150	160
	$30.00	35.00	42.00	34.00	39.00	46.00

Paper—Building Paper

Asbestos:	*lb.*	
Roll Board or Building Felt, 6 to 30 lb., per 100 sq. ft.	*6¢*	Ready Roofing
Roll Board or Building Felt, 3-32 and ⅛ in., 45 to 60 lbs., per 100 sq. ft.	*8¢*	Ready Roofing
Mill Board, Sheet, 40 x 40 in., 1-32 to ½ in.	*10¢*	Ready Roofing

Rosin Sized Sheathing: Per roll
Light weight, 25 lbs. to roll 35@40¢
Medium weight, 30 lbs. to roll, 40@45¢
Heavy weight, 40 lbs. to roll.. 50@60¢
Black Water Proof Sheathing, 500 sq. ft., 1 ply, 65¢; 2 ply, 85¢; 3 ply, $1.10; 4 ply, $1.25.
Deafening Felt, 9, 6 and 4½ sq. ft. to lb. ton.....*$18.00*
Red Rope Roofing, 250 sq. ft. per roll.....*$1.75*

Tarred Paper—
1 ply (roll 500 sq. ft.), ton....
$32.50@35.50
2 ply, roll 108 sq. ft.....*55¢*
3 ply, roll 108 sq. ft.....*75¢*
Slater's Felt (roll 500 sq. ft.) .70¢

Sand and Emery—
Flint Paper and Cloth..50&10@60%
Garnet Paper and Cloth.....
Emery Paper and CVh..50&10@60%

Parers— Apple—
Advance.....₱ doz. $4.00
Baldwin.....₱ doz. $4.00
Bonanza Improved.....each $6.50
Daisy.....₱ doz. $4.00
Dandy.....each $7.50
Eureka Improved.....each $20.00
Family Bay State.....₱ doz. $15.00
Improved Bay State.....₱ doz. $36.00
Little Star.....₱ doz. $5.00
New Lightning.....₱ doz. $7.00
Reading 72.....₱ doz. $3.25

Reading 78.....₩ doz. $6.25
Rocking Table.....₩ doz. $6.20
Turn Table '98.....₩ doz. $6.00
White Mountain.....₩ doz. $5.00

Potato—
Saratoga.....₩ doz. $7.00
White Mountain.....₩ doz. $6.00

Picks and Mattocks—
List Feb. 23, 1899.....75%
Cronk's Handled Garden Mattock, ₩ doz., $6.40.....33⅓%

Pinking Irons—
See *Irons, Pinking.*

Pins, Escutcheon—
Brass.....60@60&10%
Iron, list Nov. 11, '85..60@60&10%

Pipe, Cast Iron Soil—
Carload lots.
Standard, 2-6 in..50&10@50&10&5%
Extra Heavy, 2-6 in......65&10%
Fittings.....70&10@70&10&5%

Pipe, Merchant—
Consumers, Carloads.

	Steel. Blk.	Galv.	Iron. Blk.	Galv.
¼ & ⅜ in.	71%	55%	68%	52 %
½ in.	73%	59%	79%	56 %
¾ in.	75%	63%	72%	60 %
1 to 6 in.	79%	69%	76½%	66½%
7 to 12 in.	74%	59%	71½%	56 %

Pipe, Vitrified Sewer—
Carload lots.
Standard Pipe and Fittings, 2 to 24 in.:
New England.....68%
New York and New Jersey.71%
*Maryland, Delaware, E. Pa.*75%
West. Pa. and West Va....77%
Virginia.....76%
Ohio, Michigan and Ky....77%
Indiana.....77%
NOTE.—Carload lots are generally delivered.

Pipe, Stove—
Edwards' Nested Stove Pipe:

	C. L.	L. C. L.
5 in., per 100 joints	$7.00	$8.00
6 in., per 100 joints	7.50	8.50
7 in., per 100 joints	8.50	9.50

Planes and Plane Irons—
Wood Planes—
Bench, first qual......40&10%
Bench, Second qual......50&10%
Molding.....33⅓&10%
Bailey's (Stanley R. & L. Co.)....40%
Chapin-Stephens Co.:
Bench, First Quality.....40@40&10%
Bench, Second Quality....50@50&10%
Molding.....33⅓@33⅓&10%
Toy and German.....40@40&10%
Chaplin's.....60%
Ohio Tool Co.:
Bench, First Quality.....40@40&10%
Bench, Second Quality....50@50&10%
Molding.....33⅓@33⅓&10%
Adjustable Wood Bottom.....60%
Unicn.....60%

Iron Planes—
Bailey's (Stanley R. & L. Co.)....40%
Chaplin's Iron Planes.....50&10%
Miscellaneous Planes (Stanley R. & L. Co.).....35%
Ohio Tool Co.'s Iron Planes.....60%
Sargent's.....60&10%
Union.....60%

Plane Irons—
Wood Bench Plane Irons.....
25&10@30%
Buck Bros.....30%
Chapin-Stephens Co.....30@30&10%
Ohio Tool Co.....30%
Stanley R. & L. Co.....35%
Union.....50%
L. & I. J. White.....20&5@25%

Planters, Corn, Hand—
Kohler's Eclipse.....₩ doz. $8.50

Plates—
Felloe.....lb. 4@4¼¢
Self-Sealing Pie Plates (R. M. Co.), ₩ doz. $2.00.....50%

Pliers and Nippers—
Button Pliers....75&10@75, 10, 5%
Gas Burner, per doz., 5 in., $1.25 @ $1.30; 6 in., $1.45 @ $1.50.
Gas Pipe.. 7 8 10 12-in.
$2.00 $2.25 $3.00 $3.75
Acme Nippers.....50&5%
Cronk & Carrier Mfg. Co.:
American Button.....75&10%
Cronk's.....60%
Stub's Pattern.....50%
Combination and others.....33⅓%
Heller's Farriers' Nippers, Pincers and Tools.....40&10@40&10&10%
The Nettleton Mfg. Co. Reversible Cutting Nippers.....40%
P., S. & W. Tinners' Cutting Nippers.....40%
Wm. Schollhorn Co.:
Bernard.....33⅓%
Elm City.....33⅓%
Lodi.....50%
Paragon.....50%
Swedish Side, End and Diagonal Cutting Pliers.....50%
Utica Drop Forge & Tool Co.:
Pliers and Nippers, all kinds.....40%

Plumbs and Levels—
Chapin-Stephens Co.:
Plumbs and Levels.....30@30&10&10%
Chapin's Imp. Brass Cor.40@40&10&10%
Pocket Levels.....30@30&10&10%
Disston's Plumbs and Levels.....70%
Disston's Pocket Levels.....70%
C. E. Jennings & Co.'s Iron.....33⅓%
C. E. Jennings & Co.'s Iron, Adjustable.....40&7½%
Stanley R. & L. Co.....45%
Stanley's Duplex.....35%
Woods' Extension.....33⅓%

Poachers, Egg—
Buffalo Steam Egg Poachers, ₩ doz., No. 1, $6.00; No. 2, $9.00; No. 3, $9.00; No. 4, $12.00.....50%

Points, Glaziers'—
Bulk and 1-lb. papers,.....lb. 10¢
½-lb. papers.....lb. 9@10½¢
¼-lb. papers.....lb. 9¾@11¢

Pokes, Animal—
Ft. Madison Hawkeye.....₩ doz. $3.25
Ft. Madison Western.....₩ doz. $4.00

Police Goods—
Manufacturers' Lists...25@25&5%
Tower's.....25%

Polish—Metal, Etc—
Glasbrite, No. 2, 5 lb can (powder), each, $1.25; ₩ doz., $12.00; No. 2, 10 lb can (cake), each, $2.50; ₩ doz., $24.00.
Prestoline Liquid, No. 1 (½ pt.), ₩ doz., $3.00; No. 2 (1 qu.), $9.72....40%
Prestoline Paste.....40%
George William Hoffman:
U. S. Metal Polish Paste, 3 oz. boxes, ₩ doz. 50¢; ₩ gro. $4.50; ½ lb boxes, ₩ doz. $1.25; 1 lb boxes, ₩ doz. $2.25.
U. S. Liquid, 8 oz. cans, ₩ doz., $1.25; ₩ gro., $12.00.
Barkeepers' Friend Metal Polish, ₩ doz., $1.75; ₩ gro., $18.00.
Wynn's White Silk, ½ pt. cans, ₩ doz.....$2.00

Stove—
Black Eagle Benzine Paste, 5 lb cans, ₩ lb 10¢
Black Eagle, Liquid, ½ pt. cans.. ₩ doz. 75¢
Black Jack Paste, ¾ lb cans, ₩ gr. $9.00
Black Kid Paste, 5 lb can....each, $0.65
Ladd's Black Beauty Liquid, per 100 tins.....$6.75
Joseph Dixon's, ₩ gr. $5.75.....10%
Dixon's Plumbago.....₩ lb 8¢
Fireside.....₩ gr. $2.50
Gem, ₩ gr. $4.50.....10%
Japanese.....₩ gr. $3.50
Jet Black.....₩ gr. $3.50
Peerless Iron Enamel, 10 oz. cans.. ₩ doz. $1.50
Wynn's:
Black Silk, 5 lb pail.....each 70¢
Black Silk, ½ lb box.....₩ doz. $1.00
Black Silk, 5 oz. box.....₩ doz. $0.75
Black Silk, ½ pt. liq.....₩ doz. $1.00

Poppers, Corn—
1 qt., Square.....gro. *$9.00*
1 qt., Round.....gro. *$10.00*
1½ qt., Square.....gro. *$11.00*
2 qt., Square.....gro. *$13.00*

Post Hole and Tree Augers and Diggers—
See also *Diggers, Post Hole, &c.*

Posts, Steel—
Steel Fence Posts, each, 5 ft., 42¢; 6 ft., 46¢; 6½ ft., 48¢.
Steel Hitching Posts.....each $1.30

Potato Parers—
See *Parers, Potato.*

Pots, Glue—
Enameled.....40%
Tinned.....35%

Powder—
In Canisters:
Duck, 1 lb.....each *45¢*
Fine Sporting, 1 lb....each *75¢*
Rifle, ½-lb.....each *15¢*
Rifle, 1-lb.....each *25¢*
In Kegs:
12½-lb. kegs.....*$3.50*
25-lb. kegs.....*$4.50*
King's Semi-Smokeless:
Keg (25 lb bulk).....$6.50
Half Keg (12½ lb bulk).....3.50
Quarter Keg (6¼ lb bulk).....1.90
Case 24 (1 lb cans bulk).....8.50
Half case (1 lb cans bulk).....4.50
King's Smokeless: Shot Gun. Rifle.
Keg (25 lb bulk).....$12.00 $15.00
Half Keg (12½ lb bulk) 6.25 7.75
Quarter Keg (6¼ lb bulk). 3.25 4.00
Case 24 (1 lb cans bulk).. 14.00 17.00
Half case 12 (1 lb c. bk).. 7.25 8.75
Robin Hood Sm'less Shot Gun..50&20%

Presses—
Fruit and Jelly—
Enterprise Mfg. Co.....20@25%
Seal Presses—
Morrill's No. 1, ₩ doz., $20.00.....50%

Pruning Hooks and Shears
See *Shears.*

Pullers, Cork—
Invincible Cork Puller.....$21.00

Pullers, Nail—
Cyclops.....50%
Miller's Falls, No. 3, ₩ doz., $12.00.....33⅓&10%
Morrill's No. 1, Nail Puller, ₩ doz. $20.00.....50%
Pearson No. 1, Cyclone Spike Puller, each $30.00.....50%
Scranton, Case Lots:
No. 2B (large).....$5.50
No. 3B (small).....$5.00
Smith & Hemenway Co.:
Diamond B, No. 2, case lots..... ₩ doz. $6.00
Diamond B, No. 3, case lots..... ₩ doz. $5.50
Giant No. 1, ₩ doz. $18; No. 2, $16.50; No. 3, $15.....33⅓%
Staple Pullers.....60%
Parrot Tack and Stub Puller, ₩ doz., 75c.; ₩ gro., $6.00

Pulleys, Single Wheel—

Inch	1½	1¾	2	3
Awning or Tackle, doz.	$0.30	.45	.60	1.05
Hay Fork, Swivel or Solid Eye, doz., 4 in., $1.25; 5 in., $1.55				
Inch	2	2¼	2½	
Hot House, doz.	$0.65	.85	1.20	
Inch	1¼	1½	1¾	2
Screw, doz.	$0.16	.19	.23	.30
Inch	1¾	2	2¼	2½
Side, doz.	$0.25	.40	.55	.60
Inch	1½	1¾	2	2½

Stowell's:
Ceiling or End, Anti-Friction..60&10%
Dumb Waiter, Anti-Friction..60&10%
Electric Light.....60%
Side, Anti-Friction.....60&10%

Sash Pulleys—
Common Frame; Square or Round End, per doz, 1¾ and 2 in......*16@19¢*
Auger Mortise, no Face Plate, per doz., 1¾ and 2 in..16@19¢
Acme.....1¾ in., 16¢; 2 in., 19¢
Fox-All-Steel, Nos. 3 and 7, 2 in.... ₩ doz. 50%
Grand Rapids All Steel Noiseless..50%
Ideal.....70&10%
Niagara.....1¾ in., 16¢; 2 in., 19¢
No. 26, Troy..1¾ in., 14½¢; 2 in., 16½¢
Star.....1¾ in., 16¢; 2 in., 19¢
Tackle Blocks—See Blocks.

Pumps—
Cistern.....60@60&10%
Pitcher Spout.....80@80&10%
Wood Pumps, Tubing, &c..45@50%
Barnes Dbl. Acting (low list).....50%
Barnes' Pitcher Spout.....75&10&5%
Contractors' Rubber Diaphragm No. 2, B. & L. Block Co.....$16.00
Daisy Spray Pump.....₩ doz. $6.75
Flint & Walling's, Fast Mail Hand, (low list).....55%
Flint & Walling's Fast Mail (low list).....55&5%
Flint & Walling's Tight Top Pitcher.80%
National Specialty Mfg. Co., Measuring, $6.00.....30%
Mechanical Sprayer.....$6.00
Myers' Pumps (low list).....50%
Myers' Power Pumps.....50%
Myers' Spray Pumps.....50&10%

Pump Leathers—
Plunger and Lower Valve—Per gro.:

Inch...	2	2¼	2½	2¾
	$2.20	2.50	2.75	3.00
Inch...	3	3¼	3½	3¾	4
	$3.30	3.60	3.85	4.10	4.40

Plunger Cup Leathers—Per 100:

Inch...	2½	3	3½	4
	$2.75	3.85	5.00	6.00

Punches—
Saddlers' or Drive, good..... *doz. 50@75¢*
Spring, single tube, good quality.....*$1.75@2.00*
Revolving (4 tubes)..... *doz. $3.50@3.75*
Bemis & Call Co.'s Cast St'l Drive.50%
Bemis & Call Co.'s Check.....55%
Morrill's Nos. 1AA, 1A, 1B, 1C, $15.00.....50%
Hercules, 1 die, each $5.00.....50%
Niagara Hollow Punches.....40%
Niagara Solid Punches.....55&10%
Wm. Schollhorn Co.:
Bernard.....33⅓%
Lodi.....50%
Paragon.....50%
Steel screw, B. & K. Mfg. Co.....50%
Tinners' Hollow, P. S. & W. Co..40%
Tinners' Solid, P., S. & W. Co.. ₩ doz., $1.44.....60%

Rail—Barn Door, &c.—
Sliding Door, Painted Iron.... *2½@2¾¢*
Sliding Door, Wrought Brass, 1⅛ in., lb., 36¢.....30%
Allith Mfg. Co.:
No. 1, Reliable Hgr. Track, ₩ ft. 5½¢
No. 2, Reliable Hgr. Track, ₩ ft. 7¢
Cronk's:
Double Braced Steel Rail..₩ ft. 2¾¢
O. N. T. Rail.....2½¢
Griffin's:
xxx, ₩ 100 ft., 1 x 3-16 in., $3.00; 1¼ x 3-16 in., 3.50.
Hinged Hanger, ₩ 100 ft., 1 x 3-16 in., $3.10; 1¼ x 3-16 in., $3.60.
Lane's:
Hinged Track, ₩ 100 ft., 1 in., $3.40; 1¼ in., $4.10.
O. N. T. ₩ 100 ft., 1 in., $2.75; 1¼ in., $3.50; 1½ in., $4.00.
Standard, 1¼ in.....₩ 100 ft. $4.00
Lawrence Bros.:
₩ 100 ft. No. 201, $4.00; No. 202, $4.00
New York, 1 x 3-16 in., ₩ 100 ft. $2.75
McKinney's:
Hinged Hanger Rail, ₩ ft., 11¢..50%
None Better.....₩ ft. 3¾¢
Standard.....₩ ft. 4¢
Myers' Stayon Track.....60&10%
Richards' Mfg. Co.:
Common, 1 x 3-6 in., $3.00; 1¼ x 3-16, $3.25; 1¼ x 3-16, $3.50.
Special Hinged Hanger Rail...60&10%
Lag Screw Rail, No. 65.....50%
Gauge Trolley Track, ₩ ft., No. 31, 9¢; No. 32, 14¢; No. 33, 20¢.
No. 50.....60&10%
Nos. 61, $3.00; 62, $3.25; 63, $3.50; 64, $4.00; 45, $3.25; 46, $3.50; 49, No. 1, $3.25; 49, No. 2, $3.50.
Safety Door Hanger Co.'s Storm King Safety.....60%
Safety Door Hanger Co.'s U. S. Standard.....60%
Stowell's:
Cast Rail.....₩ ft. 1¾¢
Steel Rail, Plain.....22%
Wrought Bracket, 1 3-16 in...₩ ft. 3¢
Wrought Bracket, 1½ x 5-16..₩ ft. 7¢
Swett's Hylo, ₩ ft. 11¢.....60%
P. L. B. Steel Rail.....₩ 100 ft. $3.00
No. 0, 1 x 3-16.....₩ 100 ft. $2.75

Rakes—
NOTE.—Many goods are sold at net prices.
Fort Madison Red Head Lawn....$3.25
Fort Madison Blue Head Lawn....$2.70
Jackson Lawn, 29 and 30 teeth, ₩ doz., net.....$4.25
Cronk's:
New Champion Garden, ₩ doz., 12 teeth, $15.00; 14, $16.50; 16, $18.00..75%
Victor Garden, ₩ doz., 12 teeth, $15.00; 14, $16.50; 16, $18.00.....80%
Queen City Lawn, ₩ doz., 20 teeth, $3.45; 24, $3.60.....net.
Anticlog Lawn, ₩ doz.....$4.00
Malleable Garden.....70&10%
Kohler's:
Lawn Queen, 20-tooth.....₩ doz. $3.45
Lawn Queen, 24-tooth.....₩ doz. $3.60
Paragon, 20-tooth.....₩ doz. $2.75
Paragon, 24-tooth.....₩ doz. $3.00
Steel Garden, 14-tooth....₩ doz. $2.40
Malleable Garden, 14-tooth, ₩ doz. $1.75@2.00
Weldless Steel Garden.....75&5%

Rasps, Horse—
Disston's.....75%
Heller Bros.'.....70&5@70&10&5%
McCaffrey's American St'd..60&10&5%
New Nicholson.....70&10@75%
See also Files.

Razors—
Boras—I C.....60%
Fox Razors, No. 42..₩ doz. $20.00
Fox Razors, No. 44..₩ doz. $20.00
Fox Razors, No. 82, Platina... ₩ doz. $25.00 } 40% Dis.
Red Devil.....50%
Silberstein:
Carbo Magnetic.....$18.00
Griffon, No. 65.....$15.00
Griffon, No. 00.....$12.00
All other Razors.....40%

Safety Razors—
Kampfe Bros.:
Star Safety.....25%
Star Interchangeable.....25%
Star Safety Corn.....25%
Silberstein.....40%

Reels, Fishing—
Hendryx:
M 6, Q 6, A 6, B 6, M 9¼, M 16, Q 16, A 16, B 16, 4008, Rubber, Populo, Nickeled Populo.....20%
Aluminum, German Silv., Bronze.25%
1240 N, 124 N.....20%
3004 N, 06 N, 6 RM, G 9.....25%
4 N, 6 PN, 24 N, 26 PN.....20%
2904 P.....33⅓%
2904 PN.....33⅓%
0924 N.....33⅓%
02084 N.....33⅓%
002904 PN.....33⅓%
802 N.....33⅓%
986 PN, 2304 N, 974 PN.....25%
5009 PN, 5009 N.....20%
Competitor, 102 P, 102 PN, 202 P, 202 PN, 102 PR, 202 PR.....20%
304 P, 304 PN, 00304 P, 00304 PN.33⅓%

Registers—*List July 1, 1903.*
Japanned, Electroplated and Bronzed.....70&10%

Revolvers—
Single Action.....95¢@*$1.00*
Double Action, except 44 cal.$1.85
Double Action, 44 caliber....*$2.00*
Automatic.....*$3.45*
Hammerless.....*$4.00*

Riddles, Hardware Grade
16 in.....per doz.*$2.50@$2.75*
17 in.....per doz.*$2.75@$3.00*
18 in.....per doz.*$3.00@$3.25*

Rings and Ringers—
Bull Rings—

	2	2½	3 inch.
Steel	*$0.70*	*0.75*	*0.80 doz.*
Copper	*$1.00*	*1.15*	*1.40 doz.*

Rea's Improved Self-Piercing, Copper, 2 in., ₩ doz., $1.25; 2½ in., $1.50; 3 in., $1.75.

Hog Rings and Ringers—
Hill's Rings, gro. boxes.$4.00@4.50
Hill's Ringers, Gray Iron..... *doz. 50@55¢*
Hill's Ringers, Malleable Iron.. *doz. 70@75¢*
Blair's Rings...*per gro.$4.75@5.25*
Blair's Ringers.per doz.$0.60@ .65
Brown's Rings..*per gro.$5.00@5.50*
Brown's Ringers.per doz.$0.60@ .65

Rivets and Burrs—
Copper.....45@45&5%
Iron or Steel.....75@75&5%

Bifurcated and Tubular—
Assorted in Boxes.
Bifurcated, per doz. boxes, pasteboard boxes, 23@25¢; Tin boxes, 29@32¢.
Tubular, per doz. boxes, 50 count, 29@32¢; 100 count, 51@58¢.

Rollers—
Acme, Stowell's Anti-Friction.....50%
Barn Door, Sargent's list.....60%
Cronk's Stay No. 65, $0.90; No. 50.....$1.00
Cronk's Brinkerhoff No. 55, $0.60; No. 56.....$0.84
Lane's Stay.....40%
Richards' Stay:
Handy Adj. and Reversible No. 53.75¢
O. K. Adj. and Reversible No. 58.50¢
Lag Screw, Nos. 55 and 57.....50%
Underwriters', Nos. 59, 60.....50%
Favorite, No. 54.....60%
Stowell's Barn Door Stay..₩ doz. $1.00
Swett's Anti-Friction.....50%
Screw and Spike Stay.....₩ doz. 65¢
Hinge Adjustable Stay.....₩ doz. 90¢

Rope—
Manila, 7-16 in. diam. and larger: Pure.....lb., *12½¢*
Sisal, 7-16 in. diam. and larger: Pure.....lb.,*9½¢*
Sisal, 7-16 in. diam. and larger: No. 2 quality.....lb., *8¢*
Sisal, Hay, Hide and Bale Ropes, Medium and Coarse: Mixed.....lb., *8¢*
Pure.....lb.,*9½¢*
Sisal, Tarred, Medium Lath Yarn, Coarse and Untarred: Mixed.....lb. *8¢*
Pure.....lb.,*9½¢*
Cotton Rope: Best, ¼-in. and larger..*16½@18¢*
Medium, ¼-in. and larger, *15½@16½¢*
Common, ¼-in. and larger..*10¢*
In coils, ½¢ advance.
Jute Rope: Thread No. 1, ¼-in. & up..lb.*7¢*
Thread No. 2, ¼-in. & up.lb.*6½¢*
Old Colony Manila Transmission Rope.....₩ lb 17½¢

Wire Rope—
Galvanized.....37½&*2½%*
Plain.....45&*2½%*

Ropes, Hammock—
Covert Mfg. Co.:
Jute.....45%
Sisal.....33⅓%
Covert Saddlery Works.....60&5%

Rulers, Desk—
Stimpson & Son:
Boxwood and Maple.....30&10%

Rules

Boxwood .....60&10&10%
Ivory .....35&10@35&10&5%
Chapin-Stephens Co.:
Boxwood .....60@60&10%
Flexifold .....27½&10&10&2½%
Ivory .....35@35&10&10%
Miscellaneous .....50@50&10&10%
Combination .....55@55&10%
Stationers' .....10@10&10%
Keuffel & Esser Co.:
Folding, Wood.....35&10%
Folding, Steel.....33⅓&10%
Lufkin's Steel.....50&10%
Lufkin's Lumber.....60%
Stanley R. & L. Co.:
Boxwood 62½%
Ivory 45%
Miscellaneous 60%
Zig Zag.....40%
Zig Zag, Pin Joint.....42½%
Upson Nut Co.:
Boxwood .....60@60&10%
Ivory .....35&10@35&10&10%

Sash Balances—
See *Balance, Sash.*

Sash Locks—
See *Locks, Sash.*

Sash Weights—
See *Weights, Sash.*

Sausage Stuffers or Fillers
See *Stuffers or Fillers, Sausage.*

Saw Frames—
See *Frames, Saw.*

Saw Sets—See *Sets, Saw.*

Saw Tools—See *Tools, Saw.*

Saws—

Atkins':
Circular 50%
Band .....50&10@60%
Cross Cuts.....35&5%
Mulay, Mill and Drag.....50%
One-Man Saw.....40%
Wood Saws.....40%
Hand, Compass, &c.....40%
Chapin-Stephens Co.:
Turning Saws and Frames..30@30&10%
Diamond Saw & Stamping Works:
Sterling Kitchen Saws....30&10&10%
Disston's:
Circular, Solid and Ins'ted Tooth.50%
Band, 2 to 14 in. wide.....60%
Band, ⅛ to 1¾.....60%
Crosscuts 50%
Narrow Crosscuts.....55%
Mulay, Mill and Drag.....50%
Framed Woodsaws.....35%
Woodsaw Blades.....35%
Woodsaw Rods.....25%
Hand Saws, Nos. 12, 99, 9, 16, d100, D8, 120, 76, 77, 8.....25%
Hand Saws, Nos. 7, 107, 107½, 3, 1, 0, 00, Combination.....30%
Compass, Key Hole, &c.....25%
Butcher Saws and Blades.....35%
C. E. Jennings & Co.'s:
Back Saws.....25%
Butcher Saws.....30%
Compass and Key Hole Saws..35&5%
Framed Wood Saws.....30%
Hand Saws.....20&2½%
Wood Saw Blades.....35%
Millers Falls:
Butcher Saws.....15&10%
Star Saw Blades.....15&10%
Peace & Richardson's Hand Saws...30%
Simonds':
Circular Saws.....50%
Crescent Ground Cross Cut Saws..35%
One-Man Cross Cuts.....40&10%
Gang Mill, Mulay and Drag Saws.50%
Band Saws.....50%
Back Saws.....25@25&7½%
Butcher Saws.....35@35&7½%
Hand Saws.....25@25&7½%
Hand Saws, Bay State Brand.....45%
Compass, Key Hole, &c..25@25&7½%
Wood Saws.....35@35&7½%
Springfield Mach. Screw Co.:
Diamond Kitchen Saws....40&10@50%
Butcher Saws Blades.....35@40%
Wheeler, Madden & Clemson Mfg. Co.'s Cross Cut Saws.....50%

Hack Saws—

Atkins' Hack Saw Blades A A A..25%
Disston's:
Concave Blades.....25%
Keystone 40%
Hack Saw Frames.....30%
Fitchburg File Works, The Best...35%
C. E. Jennings & Co.'s
Hack Saw Frames, Nos. 175, 180.....40&7½%
Hack Saws, Nos. 175, 180, complete, 40&7½%
Goodell's Hack Saw Blades.....40%
Griffin's Hack Saw Frames..35&5&10%
Griffin's Hack Saw Blades....35&6&10%
Springfield Mach. Screw Co.:
Diamond Hack Saw Blades.....35%
Diamond Hack Saw Frames.....50%
Star Hack Saws and Blades.....15&10%
Sterling Hack Saw Blades....30&10&5%
Sterling Hack Saw Frames...30&10&10%
Sterling Power Hack Saw Machines, each, No. 1, $25.00; No. 2, $30.00..10%
Victor Hack Saw Blades.....25%
Victor Hack Saw Frames.....40%

Scroll—

Barnes' No. 7, $15.....25%
Barnes' Scroll Saw Blades.....40%
Barnes' Velocipede Power Scroll Saw, without boring attachment, $18; with boring attachment, $20.....20%
Lester, complete, $10.00.....15&10%
Rogers, complete, $4.00.....15&10%

Scalers, Fish—

Covert's Saddlery Works.....60&10%

Scales—

Family, Turnbull's....50@50&10%
Counter:
Hatch, Platform, ½ oz. to 4 lbs. .....doz. $5.50
Two Platforms, ½ oz. to 8 lbs. .....doz. $16.00
Union Platform, Plain.$1.70@1.90
Union Platform, Stpd.$1.85@2.15
Chatillon's:
Eureka 25%
Favorite 40%
Crocers' Trip Scales.....50%
Chicago Scale Co.:
The "Little Detective"....25 lbs 50%
Union or Family No. 2.....60%
Portable Platform (reduced list)..50%
Wagon or Stock (reduced list).25@35%
"The Standard" Portables.....50%
"The Standard" R. R. and Wagon.50%

Scrapers—

Box, 1 Handle....doz. $2.00@2.25
Box, 2 Handle....doz. $2.60@2.85
Ship....Light, $2.00; Heavy, $4.50
Adjustable Box Scraper (S. R. & L. Co.), $6.00.....45%
Chapin-Stephens Co., Box, 30@30&10&10%

Screens, Window and Frames—

Maine Screen Frames.....40&10&5%
See also *Doors.*

Screws—Bench and Hand

Bench, Iron, doz., 1 in., $2.50@2.75; 1⅛, $3.00@3.25; 1¼..$3.50@3.75
Bench, W'd, Beech..doz. 30@30&5%
Hand, Wood.....30@30&5%
R. Bliss Mfg. Co., Hand....30@30&10%
Chapin-Stephens Co., Hand..30@30&10%
Ohio Tool Co., Bench and Hand..30%

Coach, Lag and Hand Rail—

Lag, Cone Point, list Oct. 1, '99 .....75&15%
Coach, Gimlet Point, list Oct. 1, '99 .....75&10%
Hand Rail, list Jan. 1, '81.... 70&10@75%

Jack Screws—

Standard List.....80@80&5%
Millers Falls.....50&10&10%
Millers Falls, Roller.....50&10%
P., S. & W.....50%
Sargent .....70&10%
Swett Iron Works.....75&10@80&5%

Machine—

List Jan. 1, '98:
Flat or Round Head, Iron.... 50@50&10%
Flat or Round Head, Brass.... 50@50&10%

Set and Cap—

Set (Iron).....80%
Set (Steel), net advance over Iron 25%
Sq. Hd. Cap.....75%
Hex. Hd. Cap.....75%
Rd. Hd. Cap.....60&10%
Fillister Hd. Cap.....60&10&10%

Wood—

List July 23, 1903.
Flat Head, Iron.....87½&10@..%
Round Head, Iron...85 &10@..%
Flat Head, Brass....85 &10@..%
Round Head, Brass..80 &10@..%
Flat Head, Bronze...77½&10@..%
Round Head, Bronze.75 &10@..%
Drive Screws.....87½&10%

Scroll Saws—
See *Saws, Scroll.*

Scythes—

	Per doz.
Grass, No. 1, Plain....	*$6.25@6.75*
Clipper, Bronzed Webb..	*$6.50@7.00*
No. 3 Clipper, Pol'd Webb..	*$6.75@7.25*
No. 6 Clipper and Solid Steel,	*$7.00@7.50*
Bush, Weed and Bramble, No. 2.	*$6.50@7.00*
Grain, No. 1.....	*$8.25@8.75*
Bronzed Webb, No. 1..	*$8.50@9.00*
Nos. 3 and 4 Clipper, Grain..	*$8.75@9.25*
Solid Steel, No. 6.....	*$9.25@9.75*

Seeders, Raisin—

Enterprise .....25@30%

Sets— Awl and Tool—

Aiken's Sets, Awl and Tools:
No. 20, ℔ doz., $10.00.....60&10%
Fray's Adj. Tool Handles, Nos. 1, $12; 2, $18; 3, $12; 4, $9; 5, $7.....50%
C. E. Jennings & Co.'s Model Tool Holders 30%
Millers Falls Adj. Tool Handles, No. 1, $12; No. 4, $12; No. 5, $18....15&10%

Garden Tool Sets—

Ft. Madison Three Plows, Hoe, Rake and Shovel.....℔ doz sets $9.00

Sets, Nail—

Octagon .....gro. $3.50@3.75
Buck Bros.....27½%
Cannon's Diamond Point, ℔ gro.$12.40%
Mayhew's .....℔ gro. $9.00
Snell's Cor'gated, Cup Pt...℔ gro. $7.20
Snell's Knurled, Cup Pt....℔ gro. $7.20
Springfield Mach. Screw Co.:
Diamond Knurled Cup Pt.℔ gro. $7.50

Rivet—

Regular list.....75@75&10%

Saw—

Aiken's:
Genuine .....50&10%
Imitation .....50&10%
Atkin's:
Criterion 40%
Adjustable 40%
Bemis & Call Co.'s:
Cross Cut.....30%
Plate 20%
Disston's Star and Monarch.....25%
Morrill's No. 1, $15.00.....50%
Nos. 3 and 4, Cross Cut, $20.00...50%
No. 5, Mill, $30.00..... .....50%
Nos. 10, 11, 95, $15.60.....50%
No. 1 Old Style, $10.00.....50%
Special, $16.25.....50%
Giant Royal Cross Cut.....℔ doz. $8.00
Royal, Hand.....℔ doz. $4.50
Taintor Positive.....℔ doz. $6.75

Shaving—

Fox Shaving Sets, No. 20..... ℔ doz., net, $24.00
Smith & Hemenway Co.'s.....60%

Sharpeners, Knife—

Chicago Wheel & Mfg. Co.....70%
Pike Mfg. Co.:
Fast Cut Pocket Knife Hones, ℔ doz.....$1.50
Mounted Kitchen Sand Stone, ℔ doz.....$1.50
Natural Grit Carving Knife Hones, ℔ doz.....$3.00
Quick Cut Emery Carving Knife Hones, ℔ doz.....$1.50
Quick Edge Pocket Knife Hones, ℔ doz.....$2.50
} See

Skate—

Smith & Hemenway Co.....20%

Shaves, Spoke—

Iron .....doz.$1.10@1.25
Wood .....doz.$1.75@2.25
Bailey's (Stanley R. & L. Co.).....45%
Razor Edge (Stanley R. & L. Co)..35%
Chapin-Stephens Co.....30@30&10&10%
Goodell's, ℔ doz. $9.00.....15&10%
Wood's F1 and F2.....50%

Shears—

Cast Iron..	*7*	*8*	*9 in.*
Best	*$16.00*	*18.00*	*20.00 gro.*
Good ...	*$13.00*	*15.00*	*17.00 gro.*
Cheap ..	*$5.00*	*6.00*	*7.00 gro.*

Straight Trimmers, &c.:
Best quality Jap....70@70&10%
Best quality, Nickel..60@60&10%
Fair quality, Jap....80@80&5%
Fail quality, Nickel..75@7"&10%
Tailors' Shears.....40@40&10%
Acme Cast Shears.....40@40&5%
Heinisch's Tailor's Shears.....10%
Wilkinson's Sheep, 1900 list, 30&10&5%; Grass, 50&10%; Horse or Mule, 50&10%

Tinners' Snips—

Steel Blades.....20&5@20&10%
Steel Laid Blades.....40&10@50%
Forged Handles, Steel Blades, Berlin, 50@50&5%
Heinisch's Snips.....40%
Jennings & Griffin Mfg. Co.'s. 6¼ to 10 in.....50%
Niagara Snips.....40%
P., S. & W. Forged Handles.....20%

Pruning Shears—

Cronk's Hand Shears.....33⅓%
Cronk's Wood Handle Shears.....33⅓%
Disston's Combined Pruning Hook and Saw, ℔ doz. $18.00.....25%
Disston's Pruning Hook, ℔ doz. $12.00 .....25%
John T. Henry Mfg. Co.:
Pruning Shears, all grades....50&10%
P., S. & W. Co.....33⅓%
Wilkinson's Hedge, Wilcut Brand, 60&10%
Wilkinson's Lawn and Border, Wilcut Brand.....60&10%

Sheaves—Sliding Door—

Stowell's Anti-Friction.....50%
Patent Roller, Hatfield's, Sargent's list .....70&10%
Reading 40%
R. & E. list.....33⅓%
Wrightsville Hatfield Pattern.....80%

Sliding Shutter—

Reading list.....40%
R. & E. list.....33⅓%
Sargent's list.....10&10%

Shells—Shells, Empty—

Brass Shells, Empty:
Climax, Club, Rival, 10 and 12 gauge .....65&5%
Paper Shells, Empty:
Acme, Ideal, Leader, New Rapid, Magic, 10, 12, 16 and 20 gauge..25&5%
Blue Rival, New Climax, Challenge, Monarch, Defiance, Repeater, Yellow Rival, 10, 12, 16 and 20 gauge 20%
Climax, Union, League, New Rival, 10 and 12 gauge.....25%
Climax, Union, League, New Rival, 14, 16 and 20 gauge.....20%
Expert, Metal Lined and Pigeon, 10, 12, 16 and 20 gauge.....33⅓%
Robin Hood, Low Brass.....20&5%
Robin Hood, High Brass.....30&5%

Shells, Loaded—

Loaded with Black Powder..40%
Loaded with Smokeless Powder, medium grade.....40&5%
Loaded with Smokeless Powder, high grade.....40&10&10%
Robin Hood Smokeless Powder:
Robin Hood, Low Brass.....50%
Comets, High Brass.....50&10&5%

Shoes, Horse, Mule, &c.—

F.o.b. Pittsburgh:
Iron .....per keg $4.00
Steel .....per keg $3.75
Burden's, all sizes.....℔ keg $3.90

Shot—

Drop, up to B, 25-lb. bag....$1.85
Drop, B and larger..... per 25-lb. bag, $2.10
Buck, 25-lb. bag.....$2.10
Chilled, 25-lb. bag.....$2.10
Dust, 25-lb. bag.....$2.30

Shovels and Spades—

Association List, Nov. 15, 1902..40%

Snow Shovels—

Long Handle.....$2.75@$3.00
Wood and Mall, D. Handle. $3.25@$3.50

Sieves and Sifters—

Hunter's Imitation..... gro.$9.50@10.00
Hunter's Genuine..... per gro. $12.00@12.50

Buffalo Metallic Blued, R. M. Co., ℔ gr.		
14&16	16&18	18&20
$13.20	$13.50	$14.40

Shaker (Barler's Pat.) Flour Sifters, ℔ doz., $2.00.....20%

Sieves, Seamless Metallic

	—Per dozen.—			
Mesh	*14*	*16*	*18*	*20*
Iron Wire....	*$1.05*	*1.05*	*1.10*	*1.20*
Tinned Wire..	*$1.15*	*1.15*	*1.20*	*1.30*

Sieves, Wooden Rim—

Nested, 10, 11 and 12 Inch.
Mesh 18, Nested....doz. $0.90@0.95
Mesh 20, Nested....doz. $1.00@1.05
Mesh 24, Nested....doz. $1.30@1.40

Sinks, Cast Iron—

Painted, Standard list:
12 x 12 to 22 x 36 in....60&5%
20 x 40 to 24 x 50 in.....55%
24 x 60 to 24 x 120 in.....35%
Barnes' low list:
Up to and including 20 x 36 in....60%
20 x 40 to 24 x 50 in.....55%
NOTE.—There is not entire uniformity in lists used by jobbers.

Skeins, Wagon—

Cast Iron.....80@80&10%
Steel .....40@40&10%

Slates, School—
Factory Shipments.
"D" Slates.....50@50&10%
Eureka, Unexcelled Noiseless.. 60&5 tens
Victor A, Noiseless..60&5 tens &5%

Slaw Cutters—See *Cutters.*

Snaps, Harness—

German .....40@40&10%
Covert Mfg. Co.:
Derby .....30&2%
High Grade.....45%
Jockey 35%
Trojan 45%
Yankee .....30&2%
Yankee Roller.....30&2%
Covert's Saddlery Works:
Crown 60%
German 60%
Model 60%
Triumph 60%
Oneida Community:
Harness Snaps, 1 inch.....60&5%
Swivel Snaps.....60%
Swivels 50%
Sargent's Patent Guarded....66⅔&10%

Snaths—

Scythe 50%

Snips, Tinners—See *Shears.*

Spoons and Forks—

Silver Plated—

Good Quality.....50&10@60&5%
Cheap .....60@60&10%
International Silver Co.:
1847 Rogers Bros. and Rogers & Hamilton .....40&10%
Rogers & Bro., William Rogers' Eagle Brand.....50&10%
Anchor, Rogers Brand.....60%
Wm. Rogers & Son.....60&10%

Miscellaneous—

German Silver.....60@60&5%
Cattaraugus Cutlery Co.:
Seneca Silver.....50%

Tinned Iron—

Teas .....per gro. 45@50¢
Tables.....per gro.$0.50@$1.00

Springs— Door—

Chicago (Coil).....40&10%
Gem (Coil).....20
Pullman (Coil).....25%
Reliance (Coil).....40&10%
Star (Coil).....30%
Torrey's Rod, 39 in.....℔ doz. $1.10
Victor (Coil).....50&10&10%

Carriage, Wagon, &c.—

1¼ in. and Wider: Per lb.
Black .....4@4¼¢
Half Bright.....4@4¼¢
Bright .....4½@4¾¢
Painted Seat Springs:
1½ x 2 x 26.....per pr. 42¢
1½ x 3 x 28.....per pr. 70¢

Sprinklers, Lawn—

Enterprise .....25@30%
Philadelphia No. 1, ℔ doz. $12; No. 2, $15; No. 3, $24.....30%
Pleuger & Henger Mfg. Co.:
Cactus 70%
Japanese 75%
Nationals 65%

Squares—

Nickel plated.. } *List Jan. 5, 1900.*
Steel and Iron. } *75&10@75&10&5%.*
Rosewood Hdl. Try Square and T-Bevels .....60&10&10@70%
Iron Hdl. Try Squares and T-Bevels .....40&10@40&10&10%
Disston's Try Sq. and T-Bevels....70%
Winterbottom's Try and Miter, No. 1, 40%; No. 2.....50%

Squeezers, Lemon

Wood, Common, gro., No. 0, $5.25@$5.50; No. 1, $6.25@$6.50.
Wood, Porcelain Lined:
Cheap .....doz. $1.00
Good Grade.....doz. $1.25
Tinned Iron.....doz. $0.75@1.25
Iron, Porcelain Lined...doz. $1.75

Staples—

Barbed Blind.....lb. 6@6¼¢
Electricians', Association list.. 80&10&10&10%
Fence Staples, Plain, $2.25; Galvanized $2.55
Poultry Netting Staples..... per lb. 3¼@3½¢
Grand Crossing Tack Co.'s list..80&10%

Steels, Butchers'—

Dick's 30%
Foster Bros.....30%
C. & A. Hoffmann's.....40%

Steelyards — ....30@30&10%

Stocks and Dies—

Blacksmiths' .....50@50&10%
Curtis Rev'ble Ratchet Die Stock..25%
Derby Screw Plates.....25%
Green River.....25%
Lightning Screw Plate.....25%
Little Giant.....25%
Reece's New Screw Plates.....25%

Stoners, Cherry—

Enterprise .....25@30%

Stones—Oil, &c.

Chicago Wheel & Mfg. Co., 1904 list:
Gem Corundum Oil, Double Grit.60%
Gem Corundum Axe, Single or Double Grit.....60%
Gem Corundum Slips.....60%
Gem Corundum Razor Hones.....50%
Pike Mfg. Co., 1904 list: ℔ lb.
Arkansas St. No. 1, 3 to 5½ in.$2.80
Arkansas St. No. 1, 5½ to 8 in.$3.50
Arkansas Slips No. 1.....$4.00
Lily White Washita, 4 to 8 in.60¢
Rosy Red Washita, 4 to 8 in..60¢
Washita St., Extra, 4 to 8 in.50¢
Washita St., No. 1, 4 to 8 in.40¢
Washita St., No. 2, 4 to 8 in.30¢
Lily White Slips.....90¢
Rosy Red Slips.....90¢
Washita Slips, Extra.....80¢
Washita Slips, No. 1.....70¢
Washita Slips, No. 2.....60¢
} See
India Oil Stones (entire list).....33⅓%
Quickcut Emery and Corundum Oil Stone, Double Grit.....33⅓%
Quickcut Emery and Corundum Axe Stone, Double Grit.....33⅓%
Quickcut Emery Rubbing Bricks.33⅓%

Hindostan No. 1, R'g'lar, ℔ lb 8¢
Hindostan No. 1, Small, ℔ lb 10¢
Axe Stones (all kinds)
Turkey Oil Stones, Extra, 5 to 8 in., ℔ lb 80¢
Queer Creek Stones, 4 to 8 in. 20¢
Queer Creek Slips 40¢
Sand Stone 6¢
} 33⅓%

Scythe Stones—

Chicago Wheel & Mfg. Co.:
Gem Corundum, 10 in., $8.00 ℔ gro., 12 in., $10.80.
Norton Emery Scythe Stones:
Less than gross lots ℔ gro. $9.00
One gross or more ℔ gro $7.20
Lots of 10 gross or more ℔ gro. $6.00
Pike Mfg. Co., 1901 list:
Black Diamond S. S. ℔ gro. $12.00
Lamoille S. S. ℔ gro. $11.00
White Mountain S. S. ℔ gro. $9.00
Green Mountain S. S. ℔ gro. $6.00
Extra Indian Pond S.S. ℔ gro. $7.50
No. 1 Indian Pond S.S. ℔ gro. $7.00
No. 2 Indian Pond S.S. ℔ gro. $4.50
Leader Red End S. S. ℔ gro. $4.50
Quick Cut Emery ℔ gro. $10.00
Pure Corundum, ℔ gro. $18.00
Crescent $7.00
Emery Scythe Rifles, 2 Coat, $8
Emery Scythe Rifles, 3 Coat, $10
Emery Scythe Rifles, 4 Coat, $12
Balance of 1904 list 33⅓%
} 33⅓%

Stoppers, Bottle—

Victor Bottle Stoppers ℔ gro. $9.00

Stops— Bench—

Millers Falls 15&10%
Morrill's, ℔ doz., No. 1, $10.00 50%
Morrill's, No. 2, $12.50 50%

Door—

Chapin-Stephens Co. 60@60&10%

Plane—

Chapin-Stephens Co. 20%

Straps— Box—

Cary's Universal, case lots 25&20%

Hame—

Covert's Saddlery Works 60&10%

Stretchers, Carpet—

Cast Iron, Steel Points, doz. 60@60&10%
Socket doz. $1.60
Bullard, ℔ doz. $4.00
Excelsior Stretcher and Tack Hammer Combined, ℔ doz. $6.00 20%

Strops, Razor—

Star Diagonal Strop 25%

Stuffers, Sausage—

Enterprise Mfg. Co. 25@25&7½%
National Specialty Co., list Jan. 1, 1902 30&5%

Sweepers, Carpet—

National Sweeper Co.: ℔ doz.
Louis XV, Roller Bearing, Gold Plated $120.00
Hepplewhite, Roller Bearing, Silver Plated $72.00
Sheraton, Roller Bearing, N'kel. $60.00
Ye Mission, Roller Bearing, Oxidized Coppered $36.00
Transparent, Roller Bearing, Plate Glass top, Nickeled $36.00
National Queen, Roller Bearing, Fancy Veneers $27.00
Loyal, Roller Bearing, Veneers, Nickeled $25.00
Triple Medal, Roller Bearing, Nickeled $24.00
Marion, Roller Bearing, N'kel. $24.00
Marion Queen, Roller Bearing, Nickeled $21.00
Monarch, Roller Bearing, N'kel. $22.00
Monarch, Roller Bearing, Jap. $20.00
Perpetual, Regular B'r'gs, N'kel. $20.00
Perpetual, Regular B'r'gs, Jap. $18.00
Monarch Extra (17 in. case), Roller Bearing, Nickeled $36.00
Monarch Extra (17 in. case), Roller Bearing, Japanned $33.00
Auditorium (26 in. case), Roller Bearing, Nickeled $54.00
Mammoth (30 in. case), Roller Bearing, Nickeled $60.00

NOTE.—Rebates: 50c per dozen on three-dozen lots; $1 per dozen on five-dozen lots; $2 per dozen on ten-dozen lots; $2.50 per dozen on twenty-five-dozen lots.

Streator Metal Stamping Co.:
Model E, Sanitaire ℔ doz $25.00
Model A, Sterling ℔ doz. $25.00
Model B, Sterling, Nickeled ℔ doz. $23.00
Model B, Sterling, Japanned ℔ doz. $21.00
Model C, Sterling ℔ doz. $21.50
Model D, Sterling ℔ doz. $19.50

Tacks, Finishing Nails, &c.

New List, May 1, 1905.
American Carpet Tacks 90¢40@—%
American Cut Tacks 90¢40@—%
Swedes Cut Tacks 90¢40@—%
Swedes Upholsterers' 90¢50@—%
Gimp Tacks 90¢50@—%
Lace Tacks 90¢40@—%
Trimmers' Tacks 90¢40@—%
Looking Glass Tacks 65@—%
Bill Posters' and Railroad Tacks 90¢50@—%
Hungarian Nails 85@—%
Finishing Nails 70¢10@—%
Trunk and Clout Nails 80@—%

NOTE.—The above prices are for Standard Weights. An extra 5% is given on Medium Weights, and an extra 10&5% is given on light weights.

Miscellaneous—

Double Pointed Tacks 90&5 *or 6 tens*

See also Nails, Wire.

Tanks, Oil—

	Each.
Emerald, R. M. Co.	30-gal. $3.40
Emerald, R. M. Co.	60-gal. $4.25
Queen City, R. M. Co.	30-gal. $3.65
Queen City, R. M. Co.	60-gal. $4.50

Tapes, Measuring—

American Asses' Skin 50@—%
Patent Leather 25@30&5%
Steel $3 1-3&5%
Chesterman's 25@25&5%
Eddy Asses' Skin 40&10@50%
Eddy Patent Leather 25@30&5%
Eddy Steel 40@40&10%

Keuffel & Esser Co.:
Favorite, Ass Skin 40&10@50%
Favorite, Duck and Leather 25&5@25&10%
Metallic and Steel, lower list 35@35&5%
Pocket 35@35&5%
Lufkin's:
Asses' Skin 40&10@50%
Metallic 30@30&5%
Patent Bend, Leather 25&5@25&10%
Pocket 40@40&5%
Steel 33⅓@35%

Teeth, Harrow—

Steel Harrow Teeth, plain or headed, ⅝-inch and larger... per 100 lbs. $2.75@$3.00

Thermometers—

Tin Case 80¢10@80¢10&5%

Ties, Bale—Steel Wire—

Single Loop 80&2½%
Monitor, Cross Head, &c 70%

Brick Ties—

Niagara Brick Ties 25&10%

Tinners' Shears, &c.—

See *Shears, Tinners', &c.*

Tinware—

Stamped, Japanned and Pieced, sold very generally at net prices.

Tips, Safety Pole—

Covert's Saddlery Works 60&10%

Tire Benders, Upsetters, &c.

See *Benders and Upsetters, Tire.*

Tools—Coopers'—

L. & I. J. White 20@20&5%

Hay—

Myers' Hay Tools 50%
Stowell's Hay Carriers 50%
Stowell's Hay Forks 50%
Stowell's Fork Pulleys 50%

Miniature—

Smith & Hemenway Co.'s 25%

Saw—

Atkins' Cross Cut Saw Tools 40%
Simonds' Improved 33⅓%
Simonds' Crescent 25%

Ship—

L. & I. J. White 25%

Transom Lifters—

See *Lifters, Transom.*

Traps—Fly—

Balloon, Globe or Acme, doz. $1.15@$1.25; gro. $11.50@12.00
Harper, Champion or Paragon, doz. $1.25@1.40; gro. $13.00@13.50

Game—

Imitation Oneida 75@75&5%
Newhouse 45@45&5%
Hawley & Norton 65%
Victor 70&10%
Oneida Community Jump 50%

Mouse and Rat—

Mouse, Wood, Choker, doz. holes 8½@9¢
Mouse, Round or Square Wire. doz. 85@90¢
Marty French Rat and Mouse Traps (Genuine):
No. 1, Rat, each $1.21; ℔ doz. $13.25
No. 3, Rat, ℔ doz. $6.50; case of 50 $5.75 doz.
No. 3½, Rat, ℔ doz. $5.25; case of 72 ℔ gro. $4.70 doz.
No. 4, Mouse, ℔ doz. $3.85; case of 150 $3.00 doz.
No. 5, Mouse, ℔ doz. $3.00; case of 150 $2.25 doz.

Trimmers, Spoke—

Wood's E 1 50%

Trowels—

Disston Brick and Pointing 30%
Disston Plastering 25%
Disston "Standard Brand" and Garden Trowels 35%
Kohler's Steel Garden Trowels, 5 in. ℔ gro. $4.80
Kohler's Steel Garden Trowels, 6 in. ℔ gro. $6.00
Never-Break Steel Garden Trowels.. ℔ gro. $6.00
Rose Brick and Plastering 25&5%
Woodrough & McParlin, Plastering 25%

Trucks, Warehouse, &c.—

B. & L. Block Co.:
New York Pattern 50&10%
Western Pattern 60&10%
Handy Trucks ℔ doz. $16.00
Grocery ℔ doz. $15.00
Daisy Stove Trucks, Improved Pattern ℔ doz. $18.50
McKinney Trucks each $10.00
Model Stove Trucks ℔ doz. $18.50

Tubs, Wash—*No. 1 2 3*

Galvanized, per doz. $4.25 4.75 5.25
Galvanized Wash Tubs (R. M. Co.):

No.	1	2	3	10	20	30
Per doz., net	$5.70	6.30	7.20	6.60	7.20	8.10

Twine, Miscellaneous—

Flax Twine:	*BC.*	*B.*
No. 9, ¼ and ½-lb. Balls	*22@24¢*	
No. 12, ¼ and ½-lb. Balls	*18@20¢*	
No. 18, ¼ and ½-lb. Balls	*16@18¢*	
No. 24, ¼ and ½-lb. Balls	*16@18¢*	
No. 36, ¼ and ½-lb. Balls	*15@17¢*	
Chalk Line, Cotton Balls	*½-lb. 25@30¢*	
Cotton Mops, 6, 9, 12 and 15 lb. to doz	*10@18¢*	
Cotton Wrapping, 5 Balls to lb., acording to quality	*14½@20¢*	
American 2-Ply Hemp, ¼ and ½-lb. Balls	*13@14¢*	
American 3-Ply Hemp, 1-lb. Balls	*13@14¢*	
India 2-Ply Hemp, ¼ and ½-lb. Balls (Spring Twine)	*9¢*	
India 3-Ply Hemp, 1-lb. Balls	*9¢*	
India 3-Ply Hemp, 1½-lb. Balls.	*7½@8½¢*	
2, 3, 4 and 5-Ply Jute, ½-lb. Balls	*9½@10½¢*	
Mason Line, Linen, ½-lb. Bls.	*16¢*	
No. 264 Mattress, ¼ and ½-lb. Balls	*37¢*	
Wool, 3 to 6 ply	*B 7¢; A 7½¢*	

Vises—

Solid Box 60%

Parallel—

Athol Machine Co.:
Simpson's Adjustable 40%
Standard 40%
Amateur 25%
Columbian Hdw. Co. 40%
Emmert Universal:
Pattern Makers' No. 1, $15.00; No. 2, $12.50.
Machinist and Tool Makers' No. 4A, $12.50; No. 5A, $7.00; No. 6A, $10.00; No. 10A, $22.50.
Presto Quick Acting 25@25&5%
Tiger Machinists' 40%
Fisher & Norris Double Screw 15&10%
Hollands':
Machinists' 40@40&5%
Keystone 65&5@70%
Lewis Tool Co.:
Adjustable Jaw 30%
Monarch 50%
Solid Jaw 50%
Massey Vise Co.:
Clincher 40%
Perfect 20%
Lightning Grip 20%
Merrill's 20%
Millers Falls 60&10%
Parker's:
Victor 20@25%
Regulars 20@25%
Vulcan's 40@45%
Combination Pipe 55@60%
Prentiss 20@25%
Sargent's 40%
Snediker's X. L. 33⅓%
Stephens' 33⅓%
Williamson Mfg Co. Double Swivel.. 40&5%

Saw Filers—

Disston's D 3 Clamp and Guide, ℔ doz. $30 25%
Perfection Saw Clamps, ℔ doz. $4.50
Reading 60%
Wentworth's Rubber Jaw, Nos. 1, 2 and 3 45&50%

Wood Workers—

Massey Vise Co.:
Lightning Grip 15%
Perfect 15%
Wyman & Gordon's Quick Action, 6 in., $6.00; 9 in., $7.00; 14 in., $8.00.

Miscellaneous—

Bignall & Keeler Combination Pipe Vise 60&10%
Holland's Combination Pipe 60@60&5%
Massey's Quick Action Pipe 40%
Parker's Combination Pipe:
87 Series 60%
157 Series 60&5%
No. 870 40%
Williamson Mfg. Co. Double Swivel Combination Pipe 40&5%

Wads—*Price per M.*

B. E., 11 up 60¢
B. E., 9 and 10 70¢
B. E., 8 80¢
B. E., 7 80¢
P. E., 11 up $1.00
P. E., 9 and 10 1.25
P. E., 8 1.50
P. E., 7 1.50
Dis. 15%
Ely's B. E., 11 and larger $1.70@1.75
Ely's P. E., 12 to 20 $3.00@3.25

Ware, Hollow, Cast Iron, Hollow—

Stove Hollow Ware:
Enameled 55%
Ground 60%
Plain or Unground 65%
Country Hollow Ware, per 100 lbs. $2.75
White Enameled Ware:
Maslin Kettles 70%
Covered Wares
Tinned and Turned 40%
Enameled 50%
See also *Pots, Glue.*

Enameled—

Agate Nickel Steel Ware 60%
Iron Clad Ware 70&10%
Lava, Enameled 40&10%
Never Break Enameled 50%

Tea Kettles—

Galvanized Tea Kettles:

Inch	6	7	8	9
Each	45¢	50¢	55¢	65¢

Steel Hollow Ware—

Avery Spiders and Griddles 65@65&5%
Avery Kettles 60%
Porcelained 50&5@50&10%
Never Break Spiders and Griddles.. 65&5%
Never Break Kettles 60%
Solid Steel Spiders and Griddles 65&5%
Solid Steel Kettles 60%

Warmers, Foot—

Pike Mfg. Co., Soapstone 40@40&10%

Washboards—

Solid Zinc: ℔ doz.
Crescent, family size, bent frame $3.25
Red Star, family size, stationary protector $3.25
Double Zinc Surface:
Saginaw Globe, family size, stationary protector $2.90
Cable Cross, family size, stationary protector $3.15
Single Zinc Surface:
Nalad, family size, open back, perforated $2.65
Saginaw Globe, protector, family size, ventilated back $2.50
Brass Surface:
Brass King, Single Surface, open back $3.25
Nickel Plate Surface:
No. 1001 Nickel Plate, Single Surface $3.25
Glass Surface:
Glass King, Single Surface, open back $3.25
Enamel Surface:
Enamel King, Single Surface, ventilated back $3.25

Washers—Leather, Axle—

Solid 80&10@80&10&10%
Patent 90@90&5%
Coil: ¾ 1 1¼ 1¼ *Inch.*
10¢ 11¢ 12¢ 13¢ per box

Iron or Steel—

Size bolt. 5-16 ⅜ ½ ⅝ ¾
Washers $5.70 4.80 3.50 3.30 3.10
The above prices are based on 5.70¢ off list.

In lots less than one keg add ½¢ per lb.; 5-lb. boxes add ½¢ to list.

Cast Washers—

Over ½ inch, barrel lots... per lb. 1¾@2¢

Weather Strip—Flexible Felt—

Lined, per 100 ft., $2; $3; $4 40&10%
Moore's Unlined, per 100 ft., $2; $3; $4 50&10%

Wedges—

Oil Finish lb. 2.70@2.80¢

Weights—Hitching—

Covert Mfg. Co. 40%
Covert's Saddlery Works 60&10%

Sash—

Per ton, f.o.b. factory:
Eastern District $27.50@$28.00
Southern Territory $20.00@$23.00
Western and Central Districts $23.00@$25.00

Wheels, Well—

8-in., $1.55; 10-in., $2.00; 12-in., $2.50; 14-in., $4.00.

Wire and Wire Goods—

Bright and Annealed:
6 to 9 80%
10 to 18 80&2½%
19 to 26 80&7½%
27 to 36 80&2½%
Galvanized:
6 to 9 75&5%
10 to 14 75&7½%
15 to 16 72½&10&2½%
19 to 26 75%
27 to 36 72½%
Coppered:
6 to 9 75&5%
10 to 14 75&7½%
15 to 18 72½&10&2½%
19 to 26 75&10&5%
27 to 36 75%
Tinned:
6 to 14 75&10&2½%
15 to 18 75&7½%
Annealed, Steel and Tinned, on Spools 70&10&10@70&10&10&10%
Brass and Copper on Spools... 60&5@60&10&5%
Brass, list Feb. 26, '96 15%
Copper, list Feb. 26, '96 25%
Cast Steel Wire 50%
Wire Clothes Line, see Lines.
Wire Picture Cord, see Cord.

Bright Wire Goods—

List June 24 '03 90&20@90&25%
Brass Cup Hooks and Brass Screw Hooks 85@—%

Wire Cloth and Netting—

Galvanized Wire Netting 80&5@80&10%
Painted Screen Cloth, 100 ft., $1.00@1.10
Standard Galv. Hardware Grade:
Nos. 2, 2½ & 3 Mesh, sq. ft. 3¢
Nos. 4 and 5 Mesh, sq. ft. 3½¢
No. 6 Mesh, sq. ft. 3½¢
No. 8 Mesh, sq. ft. 4¢

Wire, Barb—See *Trade Report*

Wrenches—

Agricultural 75&10&5@80%
Alligator or Crocodile 70&10@75%
Baxter Pattern S Wrenches... 70&5@70&10%
Drop Forged S 45@45&5%
Acme 60&10%
Alligator Pattern 70%
Bull Dog 70%
Bemis & Call's:
Adjustable S 40%
Adjustable S Pipe 40%
Bemis Pipe 60%
Briggs Pattern 40%
Combination Black 40&5%
Combination Bright 40%
Merrick Pattern 50%
Boardman's 40%
Coes' Genuine Knife Hdl. 40&10&5&5%
Coes' Genuine Steel Hdl. 40&10&5&5%
Coes' Genuine Key Model. 40&10&5&5%
Coes', Genuine Hammer Handle 40&10&5&5%
Coes' "Mechanics'" 40&10&10&5&5%
Donohue's Engineer 40&10%
Eagle 50&10%
Elgin Wrenches, ℔ doz. $6.25
Elgin Rethreading Attachment, one die, ℔ doz. $6.25
Elgin Extra Dies, ℔ doz. $3.00
Elgin Extra Jaws, ℔ doz. $1.75
Elgin Monkey Wrench Pipe Jaws, ℔ doz. $2.10
Gem Pocket 50%
Hercules 70%
W. & B. Machinist:
Case lots 50&5%
Less than case lots 50%
W. & B. Railroad Special:
Case lots 50%
Less than case lots 40&10&5%
Solid Handles, P., S. & W. 60&5%
Stillson 65%
Vulcan Chain 50%

Fruit Jar—

Triumph Fruit Jar Wrench, 5 gross lots, ℔ gross, $7.50; ℔ doz. $0.80

Wringers—

Tuttle Roller Press Mop Pail Wringer, each, $8.00; ℔ doz. $18.00

Wrought Goods—

Staples, Hooks, &c., list March 17, '02 90@90&10%

Yokes, Neck—

Covert Saddlery Works, Trimmed 70%
Covert Saddlery Works, Neck Yoke Centers 70%

Yokes, Ox, and Ox Bows—

Fort Madison's Farmers' & Freighters' list net

Zinc—

Sheet per 100 lbs., $8.00@8.25

For the Table of "Current Metal Prices" see the First Issue of Every Month.